

AD-A244 972



(1)

**SOFTWARE DESIGN DOCUMENT
SAF Workstation CSCI (6)**

Volume 1 of 2 Sections 1.0 - 2.4.3.4.86

June, 1991



Prepared by:

BBN Systems and Technologies,
A Division of Bolt Beranek and Newman Inc.
10 Moulton Street
Cambridge, MA 02138
(617) 873-3000 FAX: (617) 873-4315

Prepared for:

Defense Advanced Research Projects Agency (DARPA)
Information and Science Technology Office
1400 Wilson Blvd., Arlington, VA 22209-2308
(202) 694-8232, AUTOVON 224-8232

Program Manager for Training Devices (PM TRADE)
12350 Research Parkway
Orlando, FL 32826-3276
(407) 380-4518

92-00247



92

**APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED**

SOFTWARE DESIGN DOCUMENT

SAF Workstation CSCI (6)

Volume 1 of 2 Sections 1.0 - 2.4.3.4.86

June, 1991

Prepared by:

BBN Systems and Technologies,
A Division of Bolt Beranek and Newman Inc.
10 Moulton Street
Cambridge, MA 02138
(617) 873-3000 FAX: (617) 873-4315



Prepared for:

Defense Advanced Research Projects Agency (DARPA)
Information and Science Technology Office
1400 Wilson Blvd., Arlington, VA 22209-2308
(202) 694-8232, AUTOVON 224-8232

Program Manager for Training Devices (PM TRADE)
12350 Research Parkway
Orlando, FL 32826-3276
(407) 380-4518

Accession For	
NTIS	CRA&I <input checked="" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
U. announced	<input type="checkbox"/>
Justification	
By _____	
Distribution / _____	
Availability Codes	
Dist	Avail and/or Special
A-1	

APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED

REPORT DOCUMENTATION PAGE

Form Approved
OPM No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

1. AGENCY USE ONLY (Leave Blank)		2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
		June 1991	Software Design Document .
4. TITLE AND SUBTITLE		5. FUNDING NUMBERS	
Software Design Document SAF Workstation CSCI (6)		Contract Numbers: MDA972-89-C-0060 MDA972-89-C-0061	
6. AUTHOR(S)		7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	
Author not specified.		Bolt Beranek and Newman, Inc. (BBN) Systems and Technologies; Advanced Simulation 10 Moulton Street Cambridge, MA 02138	
8. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		9. PERFORMING ORGANIZATION REPORT NUMBER	
Defense Advanced Research Projects Agency (DARPA) 3701 North Fairfax Drive Arlington, VA 22203-1714		Advanced Simulation #: 9109	
10. SPONSORING/MONITORING AGENCY REPORT NUMBER		11. SUPPLEMENTARY NOTES	
DARPA Report Number: None.		None	
12a. DISTRIBUTION/AVAILABILITY STATEMENT		12b. DISTRIBUTION CODE	
Distribution Statement A: Approved for public release; distribution is unlimited.		Distribution Code: A	
13. ABSTRACT (Maximum 200 words)		A Simulation Network (SIMNET) project Software Design Document that describes the Semi-Automated Forces (SAF) Workstation Computer Software Configuration Item (CSCI number 6) of the SIMNET hardware and software training system for vehicle crew training and operational training. ←	
14. SUBJECT TERMS		15. NUMBER OF PAGES	
SIMNET Software Design Document for the SAF Workstation CSCI (CSCI 6).		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified		18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	
19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified		20. LIMITATION OF ABSTRACT Same as report.	

Table of Contents

1	INTRODUCTION: SAF WORKSTATION CSCI.....	1
1.1	BACKGROUND.....	1
1.2	EXTERNAL INTERFACES	1
1.3	INTERNAL STRUCTURE.....	2
1.4	CONFIGURATION AND CONFIGURATION MANAGEMENT	3
1.5	TERMINOLOGY AND DOCUMENTATION	3
1.5.1	Glossary.....	3
1.5.2	Related Documentation.....	4
1.6	MISCELLANEOUS	5
1.6.1	Automatically Generated Definition Cross-Reference.....	5
1.6.2	Auxiliary Functions.....	6
1.6.3	Commented-Out Code.....	7
2	CSCI FUNCTIONS AND INTERFACES	8
2.1	USER PROCESS CSC.....	8
2.1.1	CSU ui>processes.lisp.....	8
2.1.1.1	DYING-PROCESS	9
2.1.1.2	MAKE-OPFOR-SUB-PROCESS-FUNCTION-1.....	9
2.1.1.3	MAKE-OPFOR-SUB-PROCESS-FUNCTION	9
2.1.1.4	COM-CHECK-OPFOR-PROCESSES.....	10
2.1.1.5	COM-SAF-CHECK-OPFOR-PROCESSES	10
2.1.1.6	OPFOR-SUB-PROCESS-REPORTS	10
2.1.1.7	SECONDS-AGO.....	10
2.1.1.8	OPFOR-SUB-PROCESS	11
2.1.1.9	'(OPFOR-SUB-PROCESS PROCESS)	11
2.1.1.10	*ALL-OPFOR-SUB-PROCESSES*	11
2.1.1.11	(METHOD MAKE-INSTANCE OPFOR-SUB-PROCESS AFTER).....	11
2.1.1.12	(METHOD DISABLE OPFOR-SUB-PROCESS).....	12
2.1.1.13	(METHOD ENABLE OPFOR-SUB-PROCESS).....	12
2.1.1.14	(METHOD MURDER OPFOR-SUB-PROCESS).....	12
2.1.1.15	(METHOD REMEMBER OPFOR-SUB-PROCESS).....	12
2.1.1.16	(METHOD REPORT OPFOR-SUB-PROCESS).....	13
2.1.1.17	*RUDP-PROCESS-LAST-CYCLE*.....	13

2.1.1.18	NETWORK-PROCESS-WAKE-UP	13
2.1.1.19	PROCESS-RUDP-PACKETS	14
2.1.1.20	MAKE-RUDP-PROCESS	14
2.1.1.21	MAKE-UPDATE-PROCESS	14
2.1.2	CSU ui>menus.lisp.....	15
2.1.2.1	(METHOD MULTIPLE-CHOICE-ALL-SHOW MULTIPLE-CHOICE-MIXIN)	15
2.1.2.2	(METHOD MULTIPLE-CHOICE-ALL-HIDE MULTIPLE-CHOICE-MIXIN)	15
2.1.2.3	*TERRAIN-MENU*	15
2.1.2.4	MAYBE-MAKE-TERRAIN-MENU	16
2.1.2.5	HANDLE-TERRAIN-MENU	16
2.1.3	CSU ui>mouse-interface.lisp.....	16
2.1.3.1	'(*NEW-INTERFACE-FLG* CONSIDER- FLIPPING)	17
2.1.3.2	*NEW-INTERFACE-FLG*	17
2.1.3.3	MOUSE-FLIP-SCREEN	17
2.1.3.4	FIND-.MOUSE	18
2.1.3.5	CONSIDER-FLIPPING	18
2.1.3.6	JUMP-TO-B&W-SCREEN	19
2.1.3.7	JUMP-TO-COLOR-SCREEN	19
2.1.3.8	*COLOR-SCREEN-MENU*	19
2.1.3.9	COLOR-SCREEN-MENU	19
2.1.3.10	CLEAR-UNITS	20
2.1.3.11	CLEAR-UNITS-AND-OVERLAYS	20
2.1.3.12	CLEAR-OVERLAYS	21
2.1.3.13	*NEW-INTERFACE-PROCESS*	21
2.1.3.14	*NIP-FORMS*	21
2.1.3.15	PUSH-NIP-FORM-IF-NECESSARY	22
2.1.3.16	EXECUTE-IN-NEW-INTERFACE	22
2.1.3.17	NEW-INTERFACE-PROCESS-FUNCTION	22
2.1.4	CSU ui>frame.lisp.....	22
2.1.4.1	STANDARD-MARGINS	23
2.1.4.2	PVD	23
2.1.4.3	PVD	24
2.1.4.4	DO-NOTHING-COMMAND-LOOP	25
2.1.4.5	MAKE-PVD-FRAME	25

2.1.4.6	SET-UP-PVD-SCALE	25
2.1.4.7	EXPOSE-PVD.....	26
2.1.4.8	Expose PVD	26
2.1.4.9	CLEAR-SAF-HISTORY.....	27
2.1.4.10	Clear SAF History	27
2.1.4.11	(SET-HIGHLIGHTED-PRESENTATION MAP-WINDOW).....	27
2.1.4.12	(WHO-LINE-DOCUMENTATION-STRING MAP-WINDOW).....	27
2.1.4.13	SAF	28
2.1.4.14	(METHOD MAKE-INSTANCE SAF AFTER).....	29
2.1.4.15	(METHOD TOP-LEVEL SAF).....	30
2.1.4.16	(METHOD GET-RUDP-PROCESS PROGRAM-FRAME).....	31
2.1.4.17	(METHOD GET-UPDATE-PROCESS PROGRAM-FRAME).....	31
2.1.5	CSU ui>commands.lisp.....	31
2.1.5.1	DEFINE-PVD-MENU-COMMAND	31
2.1.5.2	(COM-ZOOM-IN Zoom In).....	32
2.1.5.3	(COM-PAN Pan)	32
2.1.5.4	GET-ELEVATION.....	32
2.1.5.5	(COM-ZOOM-OUT Zoom Out)	33
2.1.5.6	RESCALE-PVD-FROM-MENU.....	33
2.1.5.7	(COM-RESCALE Map Scale)	33
2.1.5.8	(COM-REFRESH Refresh)	34
2.1.5.9	(COM-TERRAIN-OPTIONS Terrain Options).....	34
2.1.5.10	PAN-TO-POINT	34
2.1.5.11	PARSE-COORDS.....	34
2.1.5.12	COM-PAN-TO-POINT.....	35
2.1.5.13	COM-UNIT-OPS	35
2.1.5.14	COM-BATTALION-OPS	35
2.1.5.15	COM-REFRESH-UNIT-DISPLAY	35
2.1.5.16	COM-CLEAR-MESSAGE-LOG.....	36
2.1.5.17	COM-CLEAR.....	36
2.1.5.18	COM-SET-VIEWPORT.....	36
2.1.5.19	COM-BOMB-BUTTON.....	37
2.1.5.20	COM-SAF-SET-BOMB-PARAMETERS.....	37

2.1.5.21	COM-ROBO-COP-CONTROL.....	37
2.1.5.22	COM-SET-OPFOR-PARAMETERS	37
2.1.5.23	COM-SAVE-SCENARIO.....	38
2.1.5.24	COM-DELETE-SCENARIOS.....	38
2.1.5.25	COM-DELETE-EXERCISES	38
2.1.5.26	COM-DELETE-OVERLAYS	38
2.1.5.27	COM-STORE-SCENARIO.....	39
2.1.5.28	SUPERIOR-CONTEXT	39
2.1.5.29	ROOT-INPUT-CONTEXT	39
2.1.5.30	PVD-COMMAND-MENU.....	39
2.2	COMMANDER CSC.....	40
2.2.1	Task Organization CSC	40
2.2.1.1	CSU ui>task-org.lisp.....	41
2.2.1.1.1	WORKSTATION-BATTALION.....	41
2.2.1.1.2	MOUSE-WORKSTATION- BATTALION	41
2.2.1.1.3	RUN-BATTALION-OPS	41
2.2.1.1.4	DISPLAY-WORKSTATION- BATTALION	42
2.2.1.1.5	DISPLAY-FOR-TASK-ORG.....	42
2.2.1.1.6	INFERIORS-FOR-TASK-ORG	42
2.2.1.1.7	HIGHLIGHT-ON-TASK-ORG.....	43
2.2.1.1.8	TASK-ORG-PANE.....	43
2.2.1.1.9	(SET-HIGHLIGHTED- PRESENTATION TASK-ORG- PANE).....	43
2.2.1.1.10	(METHOD SET- HIGHLIGHTED- PRESENTATION TASK-ORG- PANE AFTER).....	44
2.2.1.1.11	DISPLAY-TASK-ORG	44
2.2.1.1.12	(METHOD DRAW-TASK- ORGANIZATION TASK-ORG- PANE).....	44
2.2.1.1.13	(METHOD DRAW-TASK- ORGANIZATION TASK-ORG- PANE AFTER).....	45
2.2.1.1.14	TASK-ORG-PANE.....	45
2.2.2	Operations Order (OPORD) CSC	45
2.2.2.1	CSU ui>opord.lisp.....	46

2.2.2.1.1	*OPORD-MODE*.....	46
2.2.2.1.2	*ENABLED-FONT*	46
2.2.2.1.3	*DISABLED-FONT*.....	46
2.2.2.1.4	*PREVIOUS-BUTTON-BOX*.....	47
2.2.2.1.5	OPORD-BUTTON.....	47
2.2.2.1.6	(METHOD FONT OPORD-BUTTON).....	47
2.2.2.1.7	(METHOD HIGHLIGHT OPORD-BUTTON).....	47
2.2.2.1.8	OPORD-BUTTON.....	48
2.2.2.1.9	PARAGRAPH.....	48
2.2.2.1.10	MAKE-PARAGRAPH.....	48
2.2.2.1.11	(METHOD DISPLAY PARAGRAPH).....	48
2.2.2.1.12	SUBPARAGRAPH.....	49
2.2.2.1.13	MAKE-SUBPARAGRAPH.....	49
2.2.2.1.14	(METHOD DISPLAY SUBPARAGRAPH).....	49
2.2.2.1.15	PARAGRAPH.....	49
2.2.2.1.16	SUBPARAGRAPH.....	50
2.2.2.1.17	*PARAGRAPH-DATA*.....	50
2.2.2.1.18	OPS-BUTTON	50
2.2.2.1.19	MAKE-OPS-BUTTON.....	51
2.2.2.1.20	(METHOD DISPLAY OPS-BUTTON).....	51
2.2.2.1.21	OPS-BUTTON	51
2.2.2.1.22	OPS-BUTTON	52
2.2.2.1.23	*OPERATIONS-BUTTONS*.....	52
2.2.2.1.24	(METHOD DISPLAY-PARAGRAPHS SAF).....	52
2.2.2.1.25	(METHOD DISPLAY-OPERATIONS SAF).....	52
2.2.2.1.26	(METHOD DISPLAY-OPORD-CHOICES SAF).....	53
2.2.2.1.27	(COM-SELECT-SUBPARAGRAPH).....	53
2.2.2.1.28	SELECT-SUBPARAGRAPH.....	53
2.2.2.1.29	(COM-SELECT-BUTTON)	53
2.2.2.1.30	SELECT-OPS-BUTTON	54

	2.2.2.1.31	OPORD.....	54
2.2.2.2	CSU objects>intervention.lisp.....	54	
	2.2.2.2.1	INTERVENE.....	55
	2.2.2.2.2	(METHOD INTERVENE SIMNET-AGENT OTHERWISE).....	55
	2.2.2.2.3	(METHOD INTERVENE SIMNET-AGENT RULES-OF- ENGAGEMENT).....	55
	2.2.2.2.4	(METHOD INTERVENE SIMNET-AGENT FACE- DIRECTION).....	55
	2.2.2.2.5	(METHOD INTERVENE SIMNET-AGENT HALT).....	56
	2.2.2.2.6	(METHOD INTERVENE SIMNET-AGENT HOLD).....	56
	2.2.2.2.7	(METHOD INTERVENE SIMNET-AGENT ENROUTE- MOVEMENT).....	56
	2.2.2.2.8	(METHOD INTERVENE SIMNET-AGENT SPEED).....	57
	2.2.2.2.9	(METHOD INTERVENE SIMNET-AGENT ALTITUDE).....	57
	2.2.2.2.10	(METHOD INTERVENE SIMNET-AGENT FOLLOW- VEHICLE).....	57
	2.2.2.2.11	(METHOD INTERVENE SIMNET-AGENT COMMAND- FROM-SIMULATOR).....	58
	2.2.2.2.12	(METHOD INTERVENE SIMNET-AGENT GO-TO LOCATION).....	58
	2.2.2.2.13	(METHOD INTERVENE SIMNET-AGENT RESUPPLY).....	59
	2.2.2.2.14	(METHOD INTERVENE SIMNET-AGENT LAND).....	59
	2.2.2.2.15	(METHOD INTERVENE SIMNET-AGENT ATTACK).....	60
	2.2.2.2.16	(METHOD INTERVENE SIMNET-AGENT RESUME).....	60
	2.2.2.2.17	(METHOD INTERVENE SIMNET-AGENT RESUME- ALL-SUBORDINATES).....	61

2.2.2.2.18	(METHOD INTERVENE SIMNET-AGENT REJOIN- UNIT)	61
2.2.2.2.19	(METHOD INTERVENE SIMNET-AGENT FORMATION)	61
2.2.2.3	CSU ui>subordinate-tasking.lisp	62
2.2.2.3.1	*TOP-LEVEL-TASKING*	62
2.2.2.3.2	OVERLAY-IS-MODIFIED	62
2.2.2.3.3	(COMPILE LOAD EVAL)	63
2.2.2.3.4	(METHOD SET- HIGHLIGHTED- PRESENTATION SUB-TASK- PANE AFTER)	63
2.2.2.3.5	*FRAG-ORDER-COUNT*	63
2.2.2.3.6	COUNT-FRAGO	64
2.2.2.3.7	FRAGO-COUNT	64
2.2.2.3.8	RESET-FRAGO-COUNT	64
2.2.2.3.9	PRINT-FRAGO-COUNT	64
2.2.2.3.10	SUBORDINATE-UNIT- TASKING	65
2.2.2.3.11	(METHOD CLEAR-STATE SUBORDINATE-UNIT- TASKING)	65
2.2.2.3.12	(METHOD SAVE-SCROLL- STATE SUBORDINATE-UNIT- TASKING)	65
2.2.2.3.13	(METHOD DISPLAY-TASKING- TABLE SUBORDINATE-UNIT- TASKING)	66
2.2.2.3.14	(METHOD DISPLAY-TITLE SUBORDINATE-UNIT- TASKING)	66
2.2.2.3.15	UNIT-TASK-OVERLAY	66
2.2.2.3.16	UNIT-TASK-UNIT	67
2.2.2.3.17	COMBAT-INSTRUCTION-SET	67
2.2.2.3.18	UNIT-TASK	68
2.2.2.3.19	(METHOD MAKE-INSTANCE UNIT-TASK AFTER)	68
2.2.2.3.20	SUB-TASK	69
2.2.2.3.21	(METHOD MAKE-INSTANCE SUB-TASK AFTER)	69

2.2.2.3.22	(METHOD CIS-NAME SUB-TASK).....	69
2.2.2.3.23	(METHOD EXECUTE-SUB-TASK SUB-TASK)	70
2.2.2.3.24	(METHOD REEXECUTE-SUB-TASK SUB-TASK)	70
2.2.2.3.25	MAKE-UNIT-LIST.....	70
2.2.2.3.26	BUILD-UNIT-TASKING-STRUCTURE	71
2.2.2.3.27	MERGE-UNIT-TASKING.....	71
2.2.2.3.28	(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK).....	72
2.2.2.3.29	(COM-CANCEL MENU-ACCELERATOR T).....	72
2.2.2.3.30	(COM-DONE MENU-ACCELERATOR T).....	72
2.2.2.3.31	(COM-WARN-OVERLAY MENU-ACCELERATOR T)	73
2.2.2.3.32	(COM-EXECUTE-OVERLAY MENU-ACCELERATOR T)	73
2.2.2.3.33	(COM-ISSUE-FRAG-ORDER MENU-ACCELERATOR T)	73
2.2.2.3.34	(COM-CHOOSE-OVERLAY).....	73
2.2.2.3.35	SELECT-OVERLAY	74
2.2.2.3.36	(COM-CHANGE-SUB-TASK).....	74
2.2.2.3.37	SELECT-SUB-TASK.....	74
2.2.2.3.38	(METHOD DISPLAY-SUB-TASKING SUB-TASK).....	74
2.2.2.3.39	(METHOD DISPLAY-OVERLAY-TASKING UNIT-TASK).....	75
2.2.2.3.40	DISPLAY-SUBORDINATE-TASKING-TABLE.....	75
2.2.2.3.41	SUBORDINATE-TASK.....	75
2.2.2.3.42	CLEAR-TOP-LEVEL-TASKING	76
2.2.2.3.43	RESET-ALL-OVERLAYS-AND-TASKS	76
2.2.2.3.44	SUBORDINATE-UNIT-TASKING	76
2.2.2.4	CSU cm>overlay.lisp.....	77
2.2.2.4.1	OVERLAY	77

2.2.2.4.2	OVERLAY?.....	78
2.2.2.4.3	(METHOD MAKE-INSTANCE OVERLAY AFTER).....	78
2.2.2.4.4	(METHOD KILL OVERLAY).....	79
2.2.2.4.5	(METHOD PRINT-SELF OVERLAY).....	79
2.2.2.4.6	(METHOD REVIEW-DATA OVERLAY).....	79
2.2.2.4.7	(METHOD REFRESH OVERLAY).....	79
2.2.2.4.8	(METHOD DRAW OVERLAY).....	80
2.2.2.4.9	(METHOD ERASE OVERLAY).....	80
2.2.2.4.10	(METHOD ADD-NEW- CONTROL-MEASURE OVERLAY).....	80
2.2.2.4.11	(METHOD ADD-CONTROL- MEASURE OVERLAY)	81
2.2.2.4.12	(METHOD DELETE-CONTROL- MEASURE OVERLAY)	81
2.2.2.4.13	(METHOD DELETE-ALL- CONTROL-MEASURES OVERLAY).....	81
2.2.2.4.14	*CM-DELETE-MENU*.....	81
2.2.2.4.15	*CM-DELETE-MENU-COLOR*.....	82
2.2.2.4.16	GET-DELETE-CM-MENU.....	82
2.2.2.4.17	MULTIPLE MENU-DELETE- CMS	82
2.2.2.4.18	(METHOD DELETE-SOME- CONTROL-MEASURES OVERLAY).....	82
2.2.2.4.19	(METHOD SEND-OVERLAY- TO-SIMHOST OVERLAY).....	83
2.2.2.4.20	(METHOD CM-NEEDS- UPDATING OVERLAY)	83
2.2.2.4.21	(METHOD ALL-ROUTES OVERLAY).....	83
2.2.2.4.22	(METHOD OVERLAY-OPS OVERLAY).....	84
2.2.2.4.23	OVERLAY	84
2.2.2.4.24	MAKE-OVERLAY.....	85
2.2.2.4.25	REDRAW-OVERLAYS.....	85
2.2.2.4.26	CHOOSE-AN-OVERLAY	86

	2.2.2.4.27	SORT-CMS.....	86
2.2.3	Control Measures CSC.....		86
2.2.3.1	CSU cm>control-measure.lisp		87
2.2.3.1.1	*CONTROL-MEASURE-ID*.....		87
2.2.3.1.2	UNIQUE-CM-ID.....		88
2.2.3.1.3	'CONTROL-MEASURE.....		88
2.2.3.1.4	CONTROL-MEASURE.....		88
2.2.3.1.5	(METHOD MAKE-INSTANCE CONTROL-MEASURE AFTER).....		89
2.2.3.1.6	(METHOD PRINT-SELF CONTROL-MEASURE).....		90
2.2.3.1.7	(METHOD REFRESH CONTROL-MEASURE).....		90
2.2.3.1.8	(METHOD ROUTEP CONTROL- MEASURE).....		90
2.2.3.1.9	(DRAW CONTROL-MEASURE)		90
2.2.3.1.10	(ERASE CONTROL-MEASURE).....		90
2.2.3.1.11	(METHOD DRAW-NAME CONTROL-MEASURE).....		91
2.2.3.1.12	(METHOD ERASE-NAME CONTROL-MEASURE).....		91
2.2.3.1.13	(REVIEW-DATA CONTROL- MEASURE).....		91
2.2.3.1.14	(MOVE-POINT CONTROL- MEASURE).....		92
2.2.3.1.15	(DELETE-POINT CONTROL- MEASURE).....		92
2.2.3.1.16	(INSERT-POINT-AFTER CONTROL-MEASURE).....		92
2.2.3.1.17	(INSERT-POINT-BEFORE CONTROL-MEASURE).....		92
2.2.3.1.18	(METHOD ADD-CM-TO- OVERLAY CONTROL- MEASURE).....		92
2.2.3.1.19	CONTROL-MEASURE- BEHAVIOR.....		93
2.2.3.1.20	(METHOD PRINT-SELF CONTROL-MEASURE- BEHAVIOR).....		93
2.2.3.1.21	CONTROL-MEASURE.....		94
2.2.3.1.22	REVERSE-XY		95

2.2.3.1.23	UNIT	96
2.2.3.1.24	LOCAL-UNIT.....	97
2.2.3.1.25	*PREV-UNITS*	97
2.2.3.1.26	*APPLIES-TO-UNIT-MENU*	97
2.2.3.1.27	MAKE-APPLIES-TO-UNIT- MENU.....	98
2.2.3.1.28	MULTIPLE-MENU-CHOOSE- UNITS.....	98
2.2.3.1.29	CHOOSE-UNITS-FOR-CM.....	98
2.2.3.1.30	CM-UNIT.....	99
2.2.3.1.31	REMOVE-UNIT-POINTERS-IN- BEHAVIORS.....	99
2.2.3.1.32	FORMATION	100
2.2.3.1.33	CM-FORMATION.....	101
2.2.3.1.34	CIS-FOR-CM.....	101
2.2.3.1.35	CM-CIS	101
2.2.3.1.36	CM-SPEED	102
2.2.3.1.37	WORLD-COORDS	102
2.2.3.1.38	CONTROL-MEASURE-LABEL.....	102
2.2.3.1.39	CONTROL-MEASURE-LABEL- GESTURE	103
2.2.3.2	CSU cm>control-measure-point.lisp	103
2.2.3.2.1	CONTROL-MEASURE-POINT	103
2.2.3.2.2	(METHOD MAKE-INSTANCE CONTROL-MEASURE-POINT AFTER)	104
2.2.3.2.3	(METHOD PAINT CONTROL- MEASURE-POINT).....	104
2.2.3.2.4	(METHOD DRAW-AS-FIRST- POINT CONTROL-MEASURE- POINT).....	104
2.2.3.2.5	(METHOD DRAW CONTROL- MEASURE-POINT).....	105
2.2.3.2.6	(METHOD ERASE CONTROL- MEASURE-POINT).....	105
2.2.3.2.7	(METHOD COPY CONTROL- MEASURE-POINT).....	105
2.2.3.2.8	CONTROL-MEASURE-POINT	106
2.2.3.2.9	CONTROL-MEASURE-POINT	106

2.2.3.2.10	CONTROL-MEASURE-GESTURE	106
2.2.3.2.11	XY-LIST-TO-POINTS	107
2.2.3.3	CSU cm>point.lisp	107
2.2.3.3.1	CM-POINT	107
2.2.3.3.2	CM-POINT-BEHAVIOR	108
2.2.3.3.3	(METHOD SEND-BEH-INFO CM-POINT-BEHAVIOR)	108
2.2.3.3.4	(METHOD COPY-BEHAVIOR CM-POINT-BEHAVIOR)	109
2.2.3.3.5	(METHOD MAKE-BEHAVIOR CM-POINT)	109
2.2.3.3.6	(METHOD REVIEW-DATA CM-POINT)	109
2.2.3.3.7	(METHOD DRAW CM-POINT)	110
2.2.3.3.8	(METHOD ERASE CM-POINT)	110
2.2.3.3.9	(METHOD MOVE-POINT CM-POINT)	111
2.2.3.3.10	(METHOD DELETE-POINT CM-POINT)	111
2.2.3.3.11	(METHOD SEND-CM-INFO CM-POINT)	111
2.2.3.3.12	(METHOD COPY CM-POINT)	111
2.2.3.3.13	(METHOD CM-INTERSECTION CM-POINT)	112
2.2.3.3.14	CM-POINT	112
2.2.3.3.15	CM-POINT	113
2.2.3.3.16	CM-POINT-GESTURE	113
2.2.3.3.17	MAKE-POINT	114
2.2.3.4	CSU cm>line.lisp	114
2.2.3.4.1	LINE	114
2.2.3.4.2	LINE-BEHAVIOR	115
2.2.3.4.3	(METHOD SEND-BEH-INFO LINE-BEHAVIOR)	115
2.2.3.4.4	(METHOD COPY-BEHAVIOR LINE-BEHAVIOR)	115
2.2.3.4.5	(METHOD MAKE-BEHAVIOR LINE)	116
2.2.3.4.6	(METHOD MAKE-INSTANCE LINE AFTER)	116

2.2.3.4.7	(METHOD INITIALIZE-POINTS LINE).....	116
2.2.3.4.8	(METHOD REVIEW-DATA LINE).....	116
2.2.3.4.9	(METHOD PAINT-NAME LINE)....	117
2.2.3.4.10	(DRAW-SEGMENT LINE)	117
2.2.3.4.11	(METHOD PAINT LINE)	117
2.2.3.4.12	(METHOD DRAW LINE)	118
2.2.3.4.13	(METHOD ERASE LINE).....	118
2.2.3.4.14	(METHOD ORTHOGONALIZE LINE).....	118
2.2.3.4.15	(METHOD MOVE-POINT LINE)....	119
2.2.3.4.16	(METHOD DELETE-POINT LINE).....	119
2.2.3.4.17	(METHOD INSERT-POINT- AFTER LINE).....	120
2.2.3.4.18	(METHOD INSERT-POINT- BEFORE LINE).....	120
2.2.3.4.19	(METHOD SEND-CM-INFO LINE).....	121
2.2.3.4.20	(METHOD MOVE-CONTROL- MEASURE LINE)	121
2.2.3.4.21	(METHOD COPY LINE)	121
2.2.3.4.22	(METHOD CM-INTERSECTION LINE).....	122
2.2.3.4.23	LINE.....	122
2.2.3.4.24	MAKE-LINE	123
2.2.3.5	CSU cm>generic-area.lisp	123
2.2.3.5.1	GENERIC-AREA.....	123
2.2.3.5.2	GENERIC-AREA?.....	124
2.2.3.5.3	(METHOD MAKE-INSTANCE GENERIC-AREA AFTER).....	124
2.2.3.5.4	(METHOD INITIALIZE-POINTS GENERIC-AREA).....	124
2.2.3.5.5	(METHOD PAINT-NAME GENERIC-AREA).....	124
2.2.3.5.6	(METHOD PAINT GENERIC- AREA).....	125
2.2.3.5.7	(METHOD DRAW GENERIC- AREA).....	125

2.2.3.5.8	(METHOD ERASE GENERIC-AREA).....	125
2.2.3.5.9	(METHOD MOVE-POINT GENERIC-AREA).....	126
2.2.3.5.10	(METHOD DELETE-POINT GENERIC-AREA).....	126
2.2.3.5.11	(METHOD INSERT-POINT-AFTER GENERIC-AREA).....	127
2.2.3.5.12	(METHOD INSERT-POINT-BEFORE GENERIC-AREA).....	127
2.2.3.5.13	(METHOD ORTHOGONALIZE GENERIC-AREA).....	128
2.2.3.5.14	(METHOD SEND-CM-INFO GENERIC-AREA).....	128
2.2.3.5.15	GENERIC-AREA.....	128
2.2.3.6	CSU cm>area.lisp.....	128
2.2.3.6.1	AREA.....	129
2.2.3.6.2	AREA-BEHAVIOR.....	129
2.2.3.6.3	(METHOD MAKE-BEHAVIOR AREA).....	130
2.2.3.6.4	(METHOD COPY-BEHAVIOR AREA-BEHAVIOR).....	130
2.2.3.6.5	(METHOD REVIEW-DATA AREA).....	130
2.2.3.6.6	(METHOD COPY AREA)	130
2.2.3.6.7	(METHOD MOVE-CONTROL-MEASURE AREA).....	131
2.2.3.6.8	(METHOD CM-INTERSECTION AREA).....	131
2.2.3.6.9	AREA.....	132
2.2.3.6.10	MAKE-AREA	132
2.2.3.7	CSU cm>zone.lisp.....	133
2.2.3.7.1	ZONE.....	133
2.2.3.7.2	ZONE-BEHAVIOR.....	133
2.2.3.7.3	(METHOD COPY-BEHAVIOR ZONE-BEHAVIOR).....	134
2.2.3.7.4	(METHOD MAKE-BEHAVIOR ZONE).....	134
2.2.3.7.5	(METHOD REVIEW-DATA ZONE).....	134
2.2.3.7.6	(METHOD COPY ZONE)	134

	2.2.3.7.7	(METHOD MOVE-CONTROL-MEASURE ZONE)	135
	2.2.3.7.8	(METHOD CM-INTERSECTION ZONE).....	135
	2.2.3.7.9	ZONE.....	136
	2.2.3.7.10	MAKE-ZONE	136
2.2.4	Routes	CSC.....	137
	2.2.4.1	CSU cm>water-avoidance.lisp	137
	2.2.4.1.1	*INTERSECTIONS-SEARCHED*.....	137
	2.2.4.1.2	*QUADS-INDEX-LIST*	137
	2.2.4.1.3	FIND-ROUTE-AROUND-WATER	138
	2.2.4.1.4	THRU-RIVER-BEND.....	138
	2.2.4.1.5	FIND-ROUTE-CORE	139
	2.2.4.1.6	FOLLOW-WATER-SEGMENTS....	139
	2.2.4.1.7	FIND-WATER-INTERSECTIONS.....	140
	2.2.4.1.8	GET-PAIRS-BY-DIRECTION.....	140
	2.2.4.1.9	FIND-SUITABLE-CROSSING-ROUTE.....	141
	2.2.4.1.10	SET-XOR	141
	2.2.4.1.11	EXTEND-CROSSING.....	141
	2.2.4.1.12	EXTEND-INTERSECTION.....	142
	2.2.4.1.13	FIRST-ITEMS.....	142
	2.2.4.1.14	EXTEND-BRIDGE.....	143
	2.2.4.1.15	EXTEND-SEGMENT.....	143
	2.2.4.1.16	INTERSECTION-DIRECTION.....	144
	2.2.4.1.17	NORMALIZE-AND-ROTATE	144
	2.2.4.1.18	FIND-FIRST-VECTOR.....	144
	2.2.4.1.19	VECTOR-IS-FIRST-P	145
	2.2.4.1.20	FIND-NEXT-POINT.....	145
	2.2.4.1.21	FIND-SEGMENT-CROSS-POINTS	145
	2.2.4.1.22	FIND-CLOSER-CROSSING	146
	2.2.4.1.23	SKIRT-RIVER	146
	2.2.4.1.24	FIND-RIVER-POINTS	147
	2.2.4.1.25	ALIGN-POINTS.....	147

2.2.4.1.26	OFFSET-POINTS	147
2.2.4.1.27	OFFSET-POINT	148
2.2.4.1.28	PRUNE-TO-POINT	148
2.2.4.1.29	CROSSING-LOCATION	149
2.2.4.1.30	RELAX-POINTS	149
2.2.4.1.31	RELAX-POINTS-AUX	150
2.2.4.1.32	FINAL-RELAX-POINTS	150
2.2.4.1.33	FLAT-LIST-TO-POINTS	151
2.2.4.1.34	SKIRT-LAKE	151
2.2.4.1.35	DISTANCE-AROUND-PATH	151
2.2.4.1.36	FOLLOW-LAKE-AROUND	152
2.2.4.1.37	SKIRT-RIVER-BEND	152
2.2.4.1.38	FIND-RIVER-BEND-POINTS	153
2.2.4.1.39	FIND-DIRECTION-AT-CROSSING	153
2.2.4.1.40	GET-QUADS-IN-REGION	153
2.2.4.2	CSU cm>water-check.lisp	154
2.2.4.2.1	ANY-WIDE-SEGMENT-THRU-WATER	154
2.2.4.2.2	SEGMENT-THRU-WATER	155
2.2.4.2.3	SEGMENT-THRU-RIVER	155
2.2.4.2.4	*INSIDE-LEVEL*	156
2.2.4.2.5	SEGMENT-THRU-LAKE	156
2.2.4.2.6	POLYGON-INTERSECTION	156
2.2.4.2.7	CHECK-LAKE-INTERSECTIONS	157
2.2.4.2.8	ALL-WIDE-SEGMENTS-THRU-WATER	157
2.2.4.2.9	WATER-THRU	158
2.2.4.2.10	WATER-SEGMENTS-THRU	158
2.2.4.2.11	LAKES-THRU	158
2.2.4.2.12	GET-QUADS-PASSED-THRU	159
2.2.4.3	CSU cm>route-point.lisp	159
2.2.4.3.1	ROUTE-POINT	160
2.2.4.3.2	(METHOD COPY ROUTE-POINT)	160
2.2.4.3.3	ROUTE-POINT	160
2.2.4.3.4	XY-LIST-TO-ROUTE-POINTS	160

2.2.4.4	CSU cm>road-routes.lisp.....	161
2.2.4.4.1	GET-ROAD-ROUTE.....	162
2.2.4.4.2	GET-ROAD-POINT.....	163
2.2.4.4.3	GET-ROAD-SEGMENT-POINT.....	163
2.2.4.4.4	FIND-NEAREST-INTERSECTION	164
2.2.4.4.5	FIND-NEAREST-ROAD-SEGMENT.....	164
2.2.4.4.6	GET-NEIGHBOR-QUAD-ROADS.....	165
2.2.4.4.7	CALCULATE-POINT-LINE-INTERSECTION	165
2.2.4.4.8	PARALLEL-DISTANCE	165
2.2.4.4.9	ROUTE-INTERSECTION.....	166
2.2.4.4.10	WITHIN-CURSOR.....	166
2.2.4.4.11	EXPAND-ROUTE.....	166
2.2.4.4.12	EXPAND-ROAD-ROUTE.....	167
2.2.4.4.13	FIND-ROAD-INTERSECTIONS....	167
2.2.4.4.14	FIND-SHORTEST-ROUTE.....	168
2.2.4.4.15	CALCULATE-ROUTE-DISTANCE	168
2.2.4.4.16	FIND-ROAD-DIRECTION.....	168
2.2.4.4.17	ROAD-SEGMENTS-FROM-INTERSECTIONS.....	169
2.2.4.4.18	DRAW-EXPANDED-ROUTE	169
2.2.4.4.19	DRAW-EXPANDED-ROUTE-CORE.....	169
2.2.4.4.20	GET-BRIDGE-ROUTE	170
2.2.4.4.21	GET-BRIDGE-POINTS	171
2.2.4.4.22	MOUSE-ON-BRIDGE-APPROACH-POINT	171
2.2.4.4.23	FIND-NEAREST-BRIDGE	172
2.2.4.5	CSU cm>route-finder.lisp	172
2.2.4.5.1	FIND-ROUTE.....	172
2.2.4.5.2	FIND-ROUTE.....	172
2.2.4.5.3	EXPAND-FIRST-ROUTE.....	173
2.2.4.5.4	SORT-ROUTE-QUEUE	173
2.2.4.5.5	PARTIAL-SORT.....	173
2.2.4.5.6	FIND-SHORTEST.....	174

2.2.4.5.7	TRIM-REDUNDANCY	174
2.2.4.5.8	DISTANCE-BETWEEN- INTERSECTIONS.....	174
2.2.4.5.9	EXPAND-ROUTE-INTO- POINTS	175
2.2.4.6	CSU cm>route.lisp	175
2.2.4.6.1	*ASK-USER*.....	176
2.2.4.6.2	ROUTE.....	176
2.2.4.6.3	CM-ROUTE?	178
2.2.4.6.4	ROUTE-BEHAVIOR.....	178
2.2.4.6.5	(METHOD COPY-BEHAVIOR ROUTE-BEHAVIOR).....	178
2.2.4.6.6	(METHOD MAKE-BEHAVIOR ROUTE).....	179
2.2.4.6.7	(METHOD MAKE-INSTANCE ROUTE AFTER).....	179
2.2.4.6.8	(METHOD INITIALIZE-POINTS ROUTE).....	179
2.2.4.6.9	(METHOD REVIEW-DATA ROUTE).....	179
2.2.4.6.10	(METHOD PAINT-NAME ROUTE).....	180
2.2.4.6.11	(METHOD PAINT ROUTE)	180
2.2.4.6.12	(METHOD DRAW ROUTE)	180
2.2.4.6.13	(METHOD ERASE ROUTE).....	180
2.2.4.6.14	(METHOD ORTHOGONALIZE ROUTE).....	181
2.2.4.6.15	(METHOD MOVE-POINT ROUTE).....	181
2.2.4.6.16	(METHOD DELETE-POINT ROUTE).....	182
2.2.4.6.17	(METHOD INSERT-POINT- AFTER ROUTE).....	182
2.2.4.6.18	(METHOD INSERT-POINT- BEFORE ROUTE).....	183
2.2.4.6.19	(METHOD CHECK ROUTE).....	184
2.2.4.6.20	(METHOD CHECK-ROUTE- SEGMENT ROUTE).....	184
2.2.4.6.21	(METHOD SEND-CM-INFO ROUTE).....	185
2.2.4.6.22	(METHOD COPY ROUTE)	185

	2.2.4.6.23	ROUTE.....	185
	2.2.4.6.24	MAKE-ROUTE	187
2.3	BATTLEMASTER CSC		188
2.3.1	Battlemaster Interface (BMI) CSC		188
2.3.1.1	CSU bmi>bmi-frame.lisp		189
	2.3.1.1.1	BMI	189
	2.3.1.1.2	(METHOD ENABLE-MMSHIP- CHANGE BMI).....	189
	2.3.1.1.3	(METHOD SET-ENABLE- MMSHIP-CHANGE BMI).....	189
	2.3.1.1.4	WORKSTATION-MMSHIP- CHANGEP	189
	2.3.1.1.5	(METHOD WS-ALIGNMENT BMI)	190
	2.3.1.1.6	(METHOD SET-WS- ALIGNMENT BMI).....	190
	2.3.1.1.7	WORKSTATION-ALIGNMENT....	190
	2.3.1.1.8	(METHOD BATTLE-VIEW BMI)....	191
	2.3.1.1.9	(METHOD SET-BATTLE-VIEW BMI)	191
	2.3.1.1.10	WORKSTATION-BATTLE- VIEW	191
	2.3.1.1.11	(METHOD BATTLE-SCHEME BMI)	191
	2.3.1.1.12	(METHOD SET-BATTLE- SCHEME BMI)	192
	2.3.1.1.13	WORKSTATION-BATTLE- SCHEME.....	192
	2.3.1.1.14	*DEFAULT-BATTALION- NUMBER*	192
	2.3.1.1.15	GET-BATTALION-NUMBER.....	193
	2.3.1.1.16	(METHOD ACCEPT-BMI- OPTIONS BMI).....	193
	2.3.1.1.17	(METHOD AFTER-PROGRAM- FRAME-SELECTION- HANDLER BMI)	193
	2.3.1.1.18	(METHOD BMI-SANDBOX BMI)	194
	2.3.1.1.19	(METHOD BMI-SET-SANDBOX BMI)	194
	2.3.1.1.20	(METHOD BMI-REMOVE- SANDBOX-OBJECT BMI)	194

2.3.1.1.21	(METHOD BMI-CLEAR-SANDBOX BMI)	194
2.3.1.1.22	(METHOD BMI-ADD-SANDBOX-OBJECT BMI)	195
2.3.1.1.23	(METHOD BMI-AIRPORTS BMI)	195
2.3.1.1.24	(METHOD BMI-SET-AIRPORTS BMI)	195
2.3.1.1.25	(METHOD BMI-ADD-AIRPORT BMI)	195
2.3.1.1.26	(METHOD FIND-AIRPORT BMI)	195
2.3.1.1.27	(METHOD DISPLAY-CONNECTION-STATE BMI)	196
2.3.1.1.28	(METHOD CREATE-MOCK-UNITS BMI)	196
2.3.1.1.29	REALLY-MAKE-SANDBOX-OBJECT	196
2.3.1.1.30	RETURN-FORCE-AND-COUNTRY-D-AND-O	197
2.3.1.1.31	ALIGNMENT-FROM-FORCE-ID	197
2.3.1.1.32	(ACCEPT-TACTICS-AND-TEAM BMI)	198
2.3.1.1.33	ACCEPT-PARAMETER-FROM-SEQUENCE	198
2.3.1.1.34	ALL-ECHELONS	198
2.3.1.1.35	GET-ECHELON-TYPES	199
2.3.1.1.36	BMI-FIND-FORMATIONS	199
2.3.1.1.37	(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)	199
2.3.1.1.38	FIND-ALL-FWA-ECHELONS	201
2.3.1.1.39	(METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)	201
2.3.1.1.40	(METHOD DISPLAY-FWA-PANE BMI)	202
2.3.1.1.41	(METHOD DISPLAY-TOTALS-PANE BMI)	202
2.3.1.1.42	(METHOD REDISPLAY-TOTALS-PANE BMI)	203
2.3.1.1.43	(METHOD REDISPLAY-OPTIONS-PANE BMI)	203

2.3.1.2	CSU bmi>commands.lisp.....	203
2.3.1.2.1	BATTLEMASTER-SCREEN-P.....	203
2.3.1.2.2	(COM-SELECT-UNITS MENU- ACCELERATOR Select Units MENU-LEVEL BATTLEMASTER).....	204
2.3.1.2.3	(COM-CLEAR-SELECTIONS MENU-ACCELERATOR Clear Selections MENU-LEVEL BATTLEMASTER).....	204
2.3.1.2.4	(COM-RESTORE-EXERCISE MENU-ACCELERATOR Restore Exercise MENU-LEVEL BATTLEMASTER).....	204
2.3.1.2.5	(COM-SAVE-SELECTIONS MENU-ACCELERATOR Save Selections MENU-LEVEL BATTLEMASTER).....	205
2.3.1.2.6	(COM-LOAD-SELECTIONS MENU-ACCELERATOR Load Selections MENU-LEVEL BATTLEMASTER).....	205
2.3.1.2.7	(COM-CREATE-UNITS MENU- ACCELERATOR Create Units MENU-LEVEL BATTLEMASTER).....	205
2.3.1.2.8	(COM-SHOW-SANDBOX).....	205
2.3.1.2.9	(COM-ADD-AIRCRAFT).....	206
2.3.1.2.10	COM-BATTLEMASTER	206
2.3.1.2.11	COM-COMMANDER	206
2.3.1.3	CSU bmi>utilities.lisp.....	206
2.3.1.3.1	USER-CHOOSE	206
2.3.1.3.2	RETRIEVE-A-SANDBOX	207
2.3.1.3.3	CONVERT-UNIT-SIZE	207
2.3.1.3.4	CONVERT-ALIGNMENT	208
2.3.1.3.5	BMI-MAKE-SANDBOX- OBJECT.....	208
2.3.1.3.6	OPFOR-SYMBOL.....	208
2.3.1.3.7	FIND-GOOD-LOCAL-FILE- SERVER	208
2.3.1.3.8	MAYBE-LOAD-FORMATION- DATA.....	209
2.3.1.4	CSU bmi>airport.lisp.....	209

2.3.1.4.1	AIRPORT-DATA	209
2.3.1.4.2	DRAW-AIRPORT-LOCATION.....	210
2.3.1.4.3	AIRPORT	210
2.3.1.4.4	(METHOD MAKE-INSTANCE AIRPORT AFTER)	210
2.3.1.4.5	(METHOD DRAW AIRPORT).....	210
2.3.1.4.6	(METHOD MAKE-FWA- SANDBOX-OBJECT AIRPORT)	211
2.3.1.4.7	MAKE-AIRPORT.....	211
2.3.1.4.8	MAKE-AIRPORTS.....	211
2.3.1.5	CSU bmi>presentation-types.lisp.....	211
2.3.1.5.1	NO-CONNECTION	212
2.3.1.5.2	MAKE-CONNECTION.....	212
2.3.1.5.3	CONNECTION	212
2.3.1.5.4	END-CONNECTION	212
2.3.1.5.5	AIRPORT	213
2.3.1.5.6	ADD-AIRCRAFT	213
2.3.1.5.7	SANDBOX-OBJECT.....	213
2.3.1.5.8	SANDBOX-OBJECT-GESTURE....	214
2.3.1.5.9	TACTICS	214
2.3.1.5.10	SIMNET-TEAM.....	215
2.3.1.5.11	MILS.....	215
2.3.1.5.12	BATTALION-BUMPER.....	215
2.3.1.5.13	COMPANY-BUMPER.....	216
2.3.1.5.14	PLATOON-BUMPER.....	216
2.3.2	Sandbox CSC	216
2.3.2.1	CSU sandbox>sandbox.lisp.....	217
2.3.2.1.1	SANDBOX	217
2.3.2.1.2	COPY-SANDBOX.....	217
2.3.2.1.3	DRAW-SANDBOX.....	218
2.3.2.1.4	ERASE-SANDBOX	218
2.3.2.1.5	STORE-SANDBOX	218
2.3.2.1.6	WRITE-SANDBOX	219
2.3.2.1.7	FORMATION-CACHE-ENTRY.....	219
2.3.2.1.8	*FORMATION-CACHE*	219
2.3.2.1.9	*DEBUG-FCE*	219
2.3.2.1.10	CACHE-FORMATION-INFO	220

	2.3.2.1.11	FIND-FORMATION-INFO	220
2.3.2.2	CSU sandbox>sandbox-object.lisp.....	SANDBOX-OBJECT.....	221
	2.3.2.2.1	SANDBOX-OBJECT.....	221
	2.3.2.2.2	COPY-SANDBOX-OBJECT.....	222
	2.3.2.2.3	SANDBOX-OBJECT-ALU.....	222
	2.3.2.2.4	SANDBOX-OBJECT-COUNTRY	223
	2.3.2.2.5	DRAW-SANDBOX-OBJECT.....	223
	2.3.2.2.6	ERASE-SANDBOX-OBJECT	224
	2.3.2.2.7	DRAW-SANDBOX-UNIT	225
2.3.2.3	CSU sandbox>utilities.lisp	225	
	2.3.2.3.1	ACTIVE-SANBOXES-AS-MENU-ITEMS	226
	2.3.2.3.2	NAMES-OF-DISK-SANBOXES.....	226
	2.3.2.3.3	SYMBOL-VS-CAR-LIST-TEST.....	226
	2.3.2.3.4	ALL-SANBOXES-AS-MENU-ITEMS.....	226
	2.3.2.3.5	'GET-LOCATION-AND-BEARING	227
	2.3.2.3.6	GET-LOCATION-AND-BEARING	227
2.3.3	scenario CSC	228	
2.3.3.1	CSU objects>storable-mixin.lisp.....	228	
	2.3.3.1.1	STORABLE-MIXIN.....	228
2.3.3.2	CSU sys>new-storage.lisp	229	
	2.3.3.2.1	*DBASE-FILE*	230
	2.3.3.2.2	COERCE-STRING	230
	2.3.3.2.3	MKATOM.....	230
	2.3.3.2.4	GET-INSTANCE-VARIABLES	232
	2.3.3.2.5	ITERATED-SYMBOL.....	232
	2.3.3.2.6	RETURN-ITERATED-SYMBOL....	232
	2.3.3.2.7	GET-VALUE-SUBST.....	233
	2.3.3.2.8	GET-VALUE	233
	2.3.3.2.9	REPLACE-VALUE-SUBST	233
	2.3.3.2.10	REPLACE-VALUE	234
	2.3.3.2.11	SAVE-TOP-LEVEL-AND-INFERIORS	234

2.3.3.2.12	MAKE-OBJECT-LIST- RECURSIVE.....	234
2.3.3.2.13	SAVE-IN-DATABASE.....	235
2.3.3.2.14	SAVE-INSTANCE	235
2.3.3.2.15	REPLACE-SLOT-VALUE- OBJECTS	235
2.3.3.2.16	READ-AND-MAKE- INSTANCES	236
2.3.3.2.17	REPLACE-SLOT-VALUE- INSTANCE-NAMES.....	236
2.3.3.2.18	REMOVE-LEFTOVER-SLOT- VALUE-INSTANCE-NAMES.....	237
2.3.3.2.19	REMOVE-LEFTOVER- INSTANCE-NAMES.....	237
2.3.3.2.20	REMOVE-LEFTOVER-DB- INSTANCES	237
2.3.3.2.21	*SCENARIO*	238
2.3.3.2.22	*SAVE-INSTANCE-FILTER*	238
2.3.3.2.23	SAVE-FOR-TASKING-P	238
2.3.3.2.24	FILTERED-SAVE-INSTANCE.....	239
2.3.3.2.25	CONCATLIST	239
2.3.3.2.26	CONCAT.....	240
2.3.3.2.27	SCENARIO.....	241
2.3.3.2.28	CLOSE-ENOUGH.....	241
2.3.3.2.29	(METHOD ADJUST-VIEWPORT SCENARIO).....	242
2.3.3.2.30	GET-SCREEN-PARAMETERS	242
2.3.3.2.31	*OVERLAY-TO-SAVE*	242
2.3.3.2.32	NAME-AND-STORE-OVERLAY	243
2.3.3.2.33	SAVE-OR-LOAD-OVERLAYS	243
2.3.3.2.34	NAME-AND-STORE- SCENARIO.....	243
2.3.3.2.35	REMOVE-DOTS-FROM- STRING.....	244
2.3.3.2.36	STORE-SCENARIO.....	244
2.3.3.2.37	RETURN-SCENARIO-OBJECT- LIST	245
2.3.3.2.38	GET-CURRENT-TOP-UNITS	245
2.3.3.2.39	*SCENARIO-DIRECTORY*	246
2.3.3.2.40	*OVERLAY-DIRECTORY*	246

2.3.3.2.41	(METHOD STORE SCENARIO).....	246
2.3.3.2.42	LOAD-OVERLAY	247
2.3.3.2.43	LOAD-SCENARIO	247
2.3.3.2.44	CREATE-STORED-INSTANCE	248
2.3.3.2.45	SET-INFERIORS-PORT-AND- SUPERIOR-ID	249
2.3.3.2.46	COPY-RELEVANT-IVS.....	249
2.3.3.2.47	*DELETE-TEXT-FILES- MENU*	250
2.3.3.2.48	MULTIPLE-MENU-CHOOSE.....	250
2.3.3.2.49	CHOOSE-SCENARIOS-TO- DELETE.....	250
2.3.3.2.50	CHOOSE-OVERLAYS-TO- DELETE.....	251
2.4	MAP DISPLAY CSC.....	252
2.4.1	Color CSC	252
2.4.1.1	CSU sys>update-process.lisp	252
2.4.1.1.1	*TERRAIN-TO-DRAW*	253
2.4.1.1.2	*TERRAIN-CONTOURS-TO- DRAW*	253
2.4.1.1.3	*EFFECTS-ERASE-TIME*.....	254
2.4.1.1.4	*UPDATE-PROCESS-WAIT- TIME*	254
2.4.1.1.5	*UPDATE-PROCESS-LAST- CYCLE*.....	254
2.4.1.1.6	*UPDATE-PROCESS-MAX- WAIT-TIME*.....	254
2.4.1.1.7	*TIME-LAST-POLLED*	255
2.4.1.1.8	UPDATE-PROCESS-WAKE-UP	255
2.4.1.1.9	UPDATE-TOP-LEVEL.....	255
2.4.1.1.10	UPDATE-TOP-LEVEL-AUX	256
2.4.1.1.11	PROCESS-USER-COMMAND.....	257
2.4.1.1.12	POLL-COMPLETED	257
2.4.1.1.13	PROCESS-NETWORK- COMMAND	258
2.4.1.1.14	PROCESS-NEW-MAP- OPTIONS	258
2.4.1.1.15	*SOIL-TYPES*	259
2.4.1.1.16	DRAW-MAP.....	259

	2.4.1.1.17	DRAW-ANOTHER-TERRAIN-QUAD	260
2.4.1.2	CSU ui>frame-utils.lisp.....	260	
	2.4.1.2.1	MAP-WINDOW.....	260
	2.4.1.2.2	MAP-WINDOW.....	261
	2.4.1.2.3	MAP-LEGEND.....	261
	2.4.1.2.4	MAP-LEGEND.....	261
	2.4.1.2.5	HIGHLIGHT-BUTTON.....	261
	2.4.1.2.6	HIGHLIGHT-BUTTON-1	262
2.4.2	Terrain Display CSC.....	262	
2.4.2.1	CSU map>clip.lisp.....	263	
	2.4.2.1.1	ROTATE-90-C	263
	2.4.2.1.2	ROTATE-180-C.....	263
	2.4.2.1.3	ROTATE-270-C.....	264
	2.4.2.1.4	REFLECT-X-MINUS-Y.....	264
	2.4.2.1.5	REFLECT-X-AXIS.....	264
	2.4.2.1.6	*DISPLAY*	265
	2.4.2.1.7	CLIP	265
	2.4.2.1.8	LEFT-COLUMN.....	266
	2.4.2.1.9	TOP-LEFT-CORNER	266
	2.4.2.1.10	LEFT-BOTTOM-REGION	266
	2.4.2.1.11	LEFT-EDGE.....	267
	2.4.2.1.12	P2-BOTTOM	267
	2.4.2.1.13	CENTER-COLUMN	267
	2.4.2.1.14	P2-LEFT-TOP.....	268
	2.4.2.1.15	P2-LEFT	268
	2.4.2.1.16	INSIDE.....	268
2.4.2.2	CSU map>color-map.lisp.....	268	
	2.4.2.2.1	*OVERLAY-ALU*	269
	2.4.2.2.2	*ERASE-OVERLAY-ALU*.....	269
	2.4.2.2.3	*OVERLAY-ALU*	269
	2.4.2.2.4	*ERASE-OVERLAY-ALU*.....	270
	2.4.2.2.5	*SOIL-ALU*	272
	2.4.2.2.6	*OBJECT-ALU*.....	272
	2.4.2.2.7	*TREE-ALU*	272
	2.4.2.2.8	*SOIL-ROAD-ALU*	273

2.4.2.2.9	*SOIL-RAIL-ALU*	273
2.4.2.2.10	*SOIL-WATER-ALU*.....	274
2.4.2.2.11	*SOIL-MUCK-ALU*	274
2.4.2.2.12	*LOW-CONTOUR-ALU*.....	274
2.4.2.2.13	*HIGH-CONTOUR-ALU*.....	275
2.4.2.2.14	*LEGEND-TEXT-ALU*	275
2.4.2.2.15	'MAKE-AN-ALU.....	276
2.4.2.2.16	MAKE-AN-ALU.....	276
2.4.2.2.17	'MAKE-ALU-AND-SET-COLOR-MAP.....	276
2.4.2.2.18	MAKE-ALU-AND-SET-COLOR-MAP	276
2.4.2.2.19	SETUP-COLOR-ALUS.....	277
2.4.2.2.20	MAKE-COLOR-ARRAY	277
2.4.2.2.21	MAKE-COLOR-ALUS.....	278
2.4.2.2.22	SET-COLOR-MAP	278
2.4.2.3	CSU map>control.lisp.....	279
2.4.2.3.1	*UNIT-TYPES*	279
2.4.2.3.2	*AREA-TYPES*.....	279
2.4.2.3.3	*LINE-TYPES*	279
2.4.2.3.4	*CONTROL-MEASURE-MENU-ITEMS*	280
2.4.2.3.5	*CONTROL-MEASURES*	280
2.4.2.3.6	CONTROL-MEASURE.....	280
2.4.2.3.7	'CONTROL-MEASURE.....	281
2.4.2.3.8	CONTROL-MEASURE.....	281
2.4.2.3.9	'AREA-CONTROL-MEASURE	281
2.4.2.3.10	AREA-CONTROL-MEASURE.....	282
2.4.2.3.11	'BATTLE-POSITION	282
2.4.2.3.12	BATTLE-POSITION	282
2.4.2.3.13	'LINE-CONTROL-MEASURE	282
2.4.2.3.14	LINE-CONTROL-MEASURE	283
2.4.2.3.15	'UNIT-BOUNDARY	283
2.4.2.3.16	UNIT-BOUNDARY	283
2.4.2.3.17	'ARROW-CONTROL-MEASURE.....	283
2.4.2.3.18	ARROW-CONTROL-MEASURE ...	284

2.4.2.3.19	(METHOD INIT CONTROL-MEASURE AFTER).....	284
2.4.2.3.20	(METHOD EDIT CONTROL-MEASURE).....	284
2.4.2.3.21	(METHOD DRAW AREA-CONTROL-MEASURE).....	285
2.4.2.3.22	(METHOD ENTER-NEW-CONTROL-MEASURE AREA-CONTROL-MEASURE).....	285
2.4.2.3.23	(METHOD DRAW BATTLE-POSITION AFTER).....	285
2.4.2.3.24	(METHOD ENTER-NEW-CONTROL-MEASURE BATTLE-POSITION).....	286
2.4.2.3.25	(METHOD DRAW LINE-CONTROL-MEASURE).....	286
2.4.2.3.26	(METHOD ENTER-NEW-CONTROL-MEASURE LINE-CONTROL-MEASURE).....	286
2.4.2.3.27	(METHOD DRAW UNIT-BOUNDARY AFTER).....	287
2.4.2.3.28	(METHOD ENTER-NEW-CONTROL-MEASURE UNIT-BOUNDARY).....	287
2.4.2.3.29	(METHOD DRAW ARROW-CONTROL-MEASURE).....	287
2.4.2.3.30	(METHOD ENTER-NEW-CONTROL-MEASURE ARROW-CONTROL-MEASURE).....	288
2.4.2.3.31	AREA-CONTROL-MEASURE	288
2.4.2.3.32	BATTLE-POSITION	288
2.4.2.3.33	LINE-CONTROL-MEASURE	289
2.4.2.3.34	UNIT-BOUNDARY	289
2.4.2.3.35	ARROW-CONTROL-MEASURE	289
2.4.2.3.36	'WITH-COLOR-.MOUSE.....	290
2.4.2.3.37	WITH-COLOR-.MOUSE.....	290
2.4.2.3.38	ROTATABLE-RECTANGLE	290
2.4.2.3.39	DRAW-ROT-RECT.....	291
2.4.2.3.40	'RUBBER-LINE.....	291
2.4.2.3.41	RUBBER-LINE.....	292
2.4.2.3.42	'SELECT-POLYGON.....	292
2.4.2.3.43	SELECT-POLYGON.....	293

2.4.2.3.44	'SINGLE-POINT	293
2.4.2.3.45	SINGLE-POINT	293
2.4.2.3.46	'DRAW-UNIT-SYMBOL.....	294
2.4.2.3.47	DRAW-UNIT-SYMBOL.....	294
2.4.2.3.48	DRAW-1-SCALLOPED-LINE.....	295
2.4.2.3.49	DRAW-2-SCALLOPED-LINES	296
2.4.2.3.50	FIND-CENTER-POINT	296
2.4.2.3.51	DRAW-ARROW	297
2.4.2.3.52	'CONTROL-MEASURES- MENU.....	297
2.4.2.3.53	CONTROL-MEASURES-MENU	297
2.4.2.3.54	'EDIT-CONTROL-MEASURES.....	298
2.4.2.3.55	EDIT-CONTROL-MEASURES.....	298
2.4.2.3.56	'DRAW-ALL-CONTROL- MEASURES.....	298
2.4.2.3.57	DRAW-ALL-CONTROL- MEASURES.....	298
2.4.2.4	CSU map>draw-wide-curve.lisp.....	299
2.4.2.4.1	(METHOD MAP-DRAW-WIDE- CURVE GRAPHICS-MIXIN).....	299
2.4.2.4.2	(METHOD MAP-DRAW- TAPERED-WIDE-CURVE GRAPHICS-MIXIN).....	299
2.4.2.5	CSU map>grids.lisp.....	300
2.4.2.5.1	(METHOD GRID-INC UTM- GRID-MIXIN)	300
2.4.2.5.2	(METHOD LEFT-X-GRID UTM- GRID-MIXIN)	300
2.4.2.5.3	(METHOD RIGHT-X-GRID UTM-GRID-MIXIN).....	300
2.4.2.5.4	(METHOD SW-GRID-WORLDS UTM-GRID-MIXIN).....	300
2.4.2.5.5	'DRAW-GRIDS.....	301
2.4.2.5.6	(METHOD DRAW-GRIDS UTM- GRID-MIXIN)	301
2.4.2.6	CSU map>intersection.lisp	301
2.4.2.6.1	COUNT-INTERSECTIONS	301
2.4.2.6.2	'POINT-INSIDE-POLYGON-P	302
2.4.2.6.3	POINT-INSIDE-POLYGON-P	302

2.4.2.6.4	'SEGMENT-INSIDE-POLYGON-P.....	302
2.4.2.6.5	SEGMENT-INSIDE-POLYGON-P.....	302
2.4.2.6.6	'SEGMENT-INTERSECTS-POLYGON-P.....	303
2.4.2.6.7	SEGMENT-INTERSECTS-POLYGON-P.....	303
2.4.2.6.8	BOUNDING-RECTANGLE.....	303
2.4.2.6.9	'POSSIBLE-INTERSECTION.....	303
2.4.2.6.10	POSSIBLE-INTERSECTION.....	304
2.4.2.6.11	'POINT-SEGMENT-INTERSECTION	304
2.4.2.6.12	POINT-SEGMENT-INTERSECTION	304
2.4.2.6.13	'POINT-LINE-INTERSECTION.....	304
2.4.2.6.14	POINT-LINE-INTERSECTION.....	305
2.4.2.7	CSU map>legend.lisp	305
2.4.2.7.1	'LEGEND-WINDOW	305
2.4.2.7.2	LEGEND-WINDOW	306
2.4.2.7.3	(METHOD INIT LEGEND-WINDOW AFTER).....	306
2.4.2.7.4	(METHOD ERASE LEGEND-WINDOW).....	306
2.4.2.7.5	(METHOD SET-LEGEND-POSITIONS LEGEND-WINDOW).....	306
2.4.2.7.6	DRAW-LEGEND	306
2.4.2.7.7	(METHOD DRAW-LEGEND LEGEND-WINDOW).....	307
2.4.2.7.8	DRAW-LEGEND-BOX-AND-LINE.....	308
2.4.2.7.9	DRAW-LEGEND-SCALE-LINE	308
2.4.2.7.10	DRAW-LEGEND-BUILDINGS.....	308
2.4.2.7.11	DRAW-LEGEND-BRIDGE	308
2.4.2.7.12	DRAW-LEGEND-CONTOUR-LINE.....	309
2.4.2.8	CSU map>quadtree-search.lisp	309
2.4.2.8.1	'QUADS-TO-DRAW	309
2.4.2.8.2	QUADS-TO-DRAW	309

2.4.2.8.3	'GET-QUAD-NODES.....	310
2.4.2.8.4	GET-QUAD-NODES.....	310
2.4.2.8.5	GET-THIS-NODE.....	310
2.4.2.9	CSU map>scalable-window.lisp.....	311
2.4.2.9.1	'SCALABLE-WINDOW.....	311
2.4.2.9.2	SCALABLE-WINDOW.....	311
2.4.2.9.3	(METHOD INIT SCALABLE-WINDOW AFTER).....	311
2.4.2.9.4	(METHOD UPDATE SCALABLE-WINDOW).....	311
2.4.2.9.5	(METHOD CLEAR-COORDS SCALABLE-WINDOW).....	312
2.4.2.9.6	(METHOD NEW-SCALE-INTERNAL SCALABLE-WINDOW).....	312
2.4.2.9.7	(METHOD NEW-SCALE SCALABLE-WINDOW).....	312
2.4.2.9.8	(METHOD NEW-SCALE SCALABLE-WINDOW BEFORE)	313
2.4.2.9.9	(METHOD NEW-SCALE SCALABLE-WINDOW AFTER)....	313
2.4.2.9.10	(METHOD DRAW-REGION SCALABLE-WINDOW).....	313
2.4.2.9.11	'WINDOW-SCALE.....	313
2.4.2.9.12	(METHOD WINDOW-SCALE SCALABLE-WINDOW).....	314
2.4.2.9.13	(METHOD SOUTH-WEST-CORNER SCALABLE-WINDOW).....	314
2.4.2.9.14	(METHOD SCALED-HEIGHT SCALABLE-WINDOW).....	314
2.4.2.9.15	(METHOD SCALED-WIDTH SCALABLE-WINDOW).....	314
2.4.2.9.16	'WORLD-EDGES.....	314
2.4.2.9.17	(METHOD WORLD-EDGES SCALABLE-WINDOW).....	315
2.4.2.9.18	'CURRENT-CENTER	315
2.4.2.9.19	(METHOD CURRENT-CENTER SCALABLE-WINDOW).....	315
2.4.2.9.20	'PAN-TO-NEW-POINT	315

2.4.2.9.21	(METHOD PAN-TO-NEW-POINT SCALABLE-WINDOW)	316
2.4.2.9.22	'RESCALE.....	316
2.4.2.9.23	(METHOD RESCALE SCALABLE-WINDOW).....	316
2.4.2.9.24	'RESCALE-FROM-MENU.....	316
2.4.2.9.25	(METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)	316
2.4.2.9.26	'ZOOM-TO.....	317
2.4.2.9.27	(METHOD ZOOM-TO SCALABLE-WINDOW).....	317
2.4.2.9.28	'ZOOM-IN	318
2.4.2.9.29	(METHOD ZOOM-IN SCALABLE-WINDOW).....	318
2.4.2.9.30	'ZOOM-OUT	318
2.4.2.9.31	(METHOD ZOOM-OUT SCALABLE-WINDOW).....	318
2.4.2.9.32	'ZOOM-IN-AROUND-CENTER	319
2.4.2.9.33	(METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW).....	319
2.4.2.9.34	'ZOOM-OUT-AROUND-CENTER	320
2.4.2.9.35	(METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW).....	320
2.4.2.9.36	'ON-TERRAIN-P.....	320
2.4.2.9.37	(METHOD ON-TERRAIN-P SCALABLE-WINDOW).....	320
2.4.2.9.38	'ON-SCREEN-P	321
2.4.2.9.39	(METHOD ON-SCREEN-P SCALABLE-WINDOW).....	321
2.4.2.9.40	(DRAW-TRIANGLE SCALABLE-WINDOW).....	321
2.4.2.9.41	(METHOD MOUSE-TO-WORLD SCALABLE-WINDOW).....	321
2.4.2.9.42	(METHOD WORLD-TO-.MOUSE SCALABLE-WINDOW).....	322
2.4.2.10	CSU map>terrain-vars.lisp	322
2.4.2.10.1	'(*ROAD-SEGMENT-ARRAY* *ROAD-INTERSECTION-	

	ARRAY* *RAIL-SEGMENT-	
	ARRAY* *BRIDGE-ARRAY*	322
2.4.2.10.2	*ROAD-SEGMENT-ARRAY*.....	323
2.4.2.10.3	*ROAD-INTERSECTION-	
	ARRAY*	323
2.4.2.10.4	*TREES-ARRAY*.....	324
2.4.2.10.5	*CONTOUR-ARRAY*	324
2.4.2.10.6	*OBJECT-ARRAY*.....	324
2.4.2.10.7	*CANOPY-ARRAY*	325
2.4.2.10.8	*CANOPY-TRIANGLES*	325
2.4.2.10.9	*WATER-SEGMENT-ARRAY*	325
2.4.2.10.10	*WATER-INTERSECTION-	
	ARRAY*	326
2.4.2.10.11	*BRIDGE-ARRAY*	326
2.4.2.10.12	*RAIL-SEGMENT-ARRAY*.....	326
2.4.2.10.13	*WATER-AREA-ARRAY*.....	327
2.4.2.10.14	*WATER-AREA-TRIANGLES*	327
2.4.2.10.15	*X-ORIGIN*.....	327
2.4.2.10.16	*X-MAXIMUM*	328
2.4.2.10.17	*Y-ORIGIN*	328
2.4.2.10.18	*Y-MAXIMUM*.....	328
2.4.2.10.19	*COLOR-MAP*.....	328
2.4.2.10.20	'*QUAD-TREE*	328
2.4.2.10.21	*QUAD-TREE*	329
2.4.2.10.22	'(QUAD-TREE-DB-NAME QUAD-TREE-VERSION	330
2.4.2.10.23	QUAD-TREE	330
2.4.2.10.24	QUAD-TREE-DEFAULT.....	331
2.4.2.10.25	'(QUAD-FEATURES QUAD- NW-NODE QUAD-NE-NODE QUAD-SE-NODE QUAD-SW- NODE).....	331
2.4.2.10.26	QUAD-NODE	331
2.4.2.10.27	'(AREA-ROAD-SEGMENTS AREA-ROAD-INTERSECTIONS....	332
2.4.2.10.28	FEATURE-NODE	332
2.4.2.10.29	*FEATURE-LIST*	332
2.4.2.10.30	'(SEGMENT-POINTS SEGMENT-WIDTH SEGMENT-	

	HEIGHT SEGMENT-ELEVATION)	333
2.4.2.10.31	SEGMENT.....	333
2.4.2.10.32	SEGMENT-HEIGHT	333
2.4.2.10.33	SEGMENT-ELEVATION	333
2.4.2.10.34	'(NET-POINTS NET-WIDTH	334
2.4.2.10.35	NETWORK-SEGMENT.....	334
2.4.2.10.36	NETWORK-INTERSECTION.....	334
2.4.2.10.37	'(BRIDGE-POINTS BRIDGE-NODE BRIDGE-WIDTH)	335
2.4.2.10.38	BRIDGE.....	335
2.4.2.11	CSU map>utilities.lisp	335
2.4.2.11.1	PIE	335
2.4.2.11.2	GRAPHICS-TRANSFORM.....	336
2.4.2.11.3	WITH-INTEGER-CONVERSION-MODE	336
2.4.2.11.4	'WITH-MAP-Graphics.....	339
2.4.2.11.5	WITH-MAP-Graphics.....	339
2.4.2.11.6	'WITH-FAST-MAP-Graphics	342
2.4.2.11.7	WITH-FAST-MAP-Graphics	342
2.4.2.11.8	'SCREEN-TO-WORLD.....	344
2.4.2.11.9	SCREEN-TO-WORLD.....	345
2.4.2.11.10	'WORLD-TO-SCREEN.....	345
2.4.2.11.11	WORLD-TO-SCREEN.....	345
2.4.2.11.12	WITH-ULTRA-FAST-Graphics.....	346
2.4.2.11.13	FAST-WORLD-TO-SCREEN.....	347
2.4.2.11.14	TRANSFORM-POINT.....	347
2.4.2.11.15	'DISTANCE	348
2.4.2.11.16	DISTANCE	348
2.4.2.11.17	'NEAR.....	349
2.4.2.11.18	NEAR.....	349
2.4.2.11.19	SAFE-ATAN	350
2.4.2.12	CSU map>utm-grid-mixin.lisp.....	350
2.4.2.12.1	*ALPHABET-ARRAY*	351
2.4.2.12.2	FILL-ALPHABET-ARRAY	351
2.4.2.12.3	NIL.....	351

2.4.2.12.4	CHAR-TO-COORD.....	351
2.4.2.12.5	COORD-TO-CHAR.....	352
2.4.2.12.6	UTM-OFFSET	352
2.4.2.12.7	'UTM-GRID-MIXIN.....	352
2.4.2.12.8	UTM-GRID-MIXIN.....	352
2.4.2.12.9	(METHOD UPDATE UTM- GRID-MIXIN AFTER)	353
2.4.2.12.10	'SET-ORIGIN-UTM- COORDINATES	353
2.4.2.12.11	(METHOD SET-ORIGIN-UTM- COORDINATES UTM-GRID- MIXIN).....	353
2.4.2.12.12	'WORLD-TO-UTM.....	353
2.4.2.12.13	(METHOD WORLD-TO-UTM UTM-GRID-MIXIN).....	354
2.4.2.12.14	'UTM-TO-WORLD.....	354
2.4.2.12.15	(METHOD UTM-TO-WORLD UTM-GRID-MIXIN).....	354
2.4.2.12.16	UTM-GRID-MIXIN.....	354
2.4.2.13	CSU map>vectors.lisp	355
2.4.2.13.1	'VEC-NORMALIZE.....	355
2.4.2.13.2	VEC-NORMALIZE.....	355
2.4.2.13.3	'VEC-ROTATE.....	356
2.4.2.13.4	VEC-ROTATE.....	356
2.4.2.13.5	'VEC-ADD.....	357
2.4.2.13.6	VEC-ADD.....	357
2.4.2.13.7	'VEC-SUB.....	358
2.4.2.13.8	VEC-SUB.....	358
2.4.2.13.9	'VEC-SCALE.....	359
2.4.2.13.10	VEC-SCALE.....	359
2.4.2.13.11	'VEC-ANGLE.....	360
2.4.2.13.12	VEC-ANGLE.....	360
2.4.2.13.13	'FIND-INTER-POINT	360
2.4.2.13.14	FIND-INTER-POINT	361
2.4.2.13.15	DRAW-BRIDGE-SYMBOL.....	361
2.4.2.14	CSU map>zoom-levels.lisp.....	362
2.4.2.14.1	ZOOM-LEVEL	362
2.4.2.14.2	'*ZOOM-LEVELS*.....	362

2.4.2.14.3	*ZOOM-LEVELS*.....	363
2.4.2.14.4	'CURRENT-ZOOM-LEVEL*	363
2.4.2.14.5	*CURRENT-ZOOM-LEVEL*	363
2.4.2.14.6	'SCALE-STRING	365
2.4.2.14.7	SCALE-STRING	365
2.4.2.14.8	'MAJOR-CONTOUR-LINE- INTERVAL	366
2.4.2.14.9	MAJOR-CONTOUR-LINE- INTERVAL	366
2.4.2.14.10	'MINOR-CONTOUR-LINE- INTERVAL	366
2.4.2.14.11	MINOR-CONTOUR-LINE- INTERVAL	367
2.4.2.14.12	'CONTOUR-POINT-INTERVAL....	367
2.4.2.14.13	CONTOUR-POINT-INTERVAL	367
2.4.2.14.14	'DRAW-TREELINES	368
2.4.2.14.15	DRAW-TREELINES	368
2.4.2.14.16	'DRAW-TREELINE-AS-SPLINE....	368
2.4.2.14.17	DRAW-TREELINE-AS-SPLINE....	368
2.4.2.14.18	'DRAW-ROADS-WITH-WIDTH....	369
2.4.2.14.19	DRAW-ROADS-WITH-WIDTH....	369
2.4.2.14.20	'DRAW-WATER-WITH-WIDTH....	369
2.4.2.14.21	DRAW-WATER-WITH-WIDTH	369
2.4.2.14.22	'DRAW-RAILS-WITH-WIDTH.....	370
2.4.2.14.23	DRAW-RAILS-WITH-WIDTH.....	370
2.4.2.14.24	'CURRENT-SCALE	370
2.4.2.14.25	CURRENT-SCALE	370
2.4.2.14.26	'CURRENT-ANCHOR-X.....	371
2.4.2.14.27	CURRENT-ANCHOR-X.....	371
2.4.2.14.28	'CURRENT-ANCHOR-Y	372
2.4.2.14.29	CURRENT-ANCHOR-Y	372
2.4.2.14.30	'LEGEND-SIZE.....	373
2.4.2.14.31	LEGEND-SIZE.....	373
2.4.2.14.32	'LEGEND-LENGTH.....	373
2.4.2.14.33	LEGEND-LENGTH.....	373
2.4.2.14.34	'NEXT-ZOOM-OUT	374
2.4.2.14.35	NEXT-ZOOM-OUT	374

2.4.2.14.36	'NEXT-ZOOM-IN	374
2.4.2.14.37	NEXT-ZOOM-IN	374
2.4.2.14.38	MAKE-FT-KNOX-ZOOM- LEVELS.....	375
2.4.2.14.39	*ZOOM-LEVELS*.....	375
2.4.2.14.40	*CURRENT-ZOOM-LEVEL*	376
2.4.2.14.41	MAKE-HUNTERLGT-ZOOM- LEVELS.....	378
2.4.2.15	CSU map>draw-terrain.lisp	378
2.4.3	Vehicle and Effects Display CSC	379
2.4.3.1	CSU color-window>color-alus.lisp	379
2.4.3.1.1	'(*ERASE-VEHICLES-ALU* *DEFENSE-ALU* *OFFENSE- ALU* *TRIM-ALU* *ERASE- EFFECTS-ALU*.....	380
2.4.3.1.2	SETUP-COLOR-ALUS.....	380
2.4.3.1.3	Init Window.....	381
2.4.3.2	CSU fonts>bluefor-icons.bfd	381
2.4.3.3	CSU fonts>opfor-icons.bfd	382
2.4.3.4	CSU simnet-objects>draw-vehicles.lisp	382
2.4.3.4.1	ERASE-VEHICLE-ALU.....	382
2.4.3.4.2	WITH-CORRECT-MAP- GRAPHICS.....	383
2.4.3.4.3	*MIN-IMAGE-SCALE*	383
2.4.3.4.4	DRAW-BOX.....	384
2.4.3.4.5	DRAW-FILLED-BOX.....	384
2.4.3.4.6	'(DRAW-IMAGE ERASE- IMAGE)	385
2.4.3.4.7	DRAW-IMAGE	385
2.4.3.4.8	ERASE-IMAGE.....	386
2.4.3.4.9	UPDATE-SCALE.....	386
2.4.3.4.10	IMAGE	386
2.4.3.4.11	(METHOD UPDATE-SCALE IMAGE)	386
2.4.3.4.12	(METHOD ERASE-IMAGE IMAGE)	387
2.4.3.4.13	(METHOD DRAW-IMAGE IMAGE BEFORE)	387
2.4.3.4.14	(METHOD DRAW-IMAGE IMAGE)	387

2.4.3.4.15	IMAGE	387
2.4.3.4.16	HELO-IMAGE	388
2.4.3.4.17	(METHOD UPDATE-SCALE HELO-IMAGE)	389
2.4.3.4.18	(METHOD DRAW-IMAGE HELO-IMAGE)	389
2.4.3.4.19	LOCAL-HELO-IMAGE.....	390
2.4.3.4.20	REMOTE-HELO-IMAGE.....	390
2.4.3.4.21	HELO-IMAGE	390
2.4.3.4.22	FIGHTER-IMAGE	390
2.4.3.4.23	(METHOD UPDATE-SCALE FIGHTER-IMAGE)	391
2.4.3.4.24	(METHOD DRAW-IMAGE FIGHTER-IMAGE)	391
2.4.3.4.25	LOCAL-FIGHTER-IMAGE.....	392
2.4.3.4.26	REMOTE-FIGHTER-IMAGE.....	392
2.4.3.4.27	FIGHTER-IMAGE	392
2.4.3.4.28	GROUND-VEHICLE-IMAGE.....	392
2.4.3.4.29	(METHOD UPDATE-HULL- SCALE GROUND-VEHICLE- IMAGE)	393
2.4.3.4.30	(METHOD UPDATE-TURRET- SCALE GROUND-VEHICLE- IMAGE)	393
2.4.3.4.31	(METHOD UPDATE- COMPARTMENT-SCALE GROUND-VEHICLE-IMAGE).....	393
2.4.3.4.32	(METHOD UPDATE-MISSILE- SCALE GROUND-VEHICLE- IMAGE)	393
2.4.3.4.33	(METHOD UPDATE-SCALE GROUND-VEHICLE-IMAGE).....	394
2.4.3.4.34	(METHOD DRAW-HULL- IMAGE GROUND-VEHICLE- IMAGE)	394
2.4.3.4.35	(METHOD DRAW-TURRET- IMAGE GROUND-VEHICLE- IMAGE)	394
2.4.3.4.36	(METHOD DRAW- COMPARTMENT-IMAGE GROUND-VEHICLE-IMAGE).....	394

2.4.3.4.37	(METHOD DRAW-MISSILE- IMAGE GROUND-VEHICLE- IMAGE)	395
2.4.3.4.38	(METHOD DRAW-IMAGE GROUND-VEHICLE-IMAGE).....	395
2.4.3.4.39	GROUND-VEHICLE-IMAGE.....	395
2.4.3.4.40	HULL-IMAGE	396
2.4.3.4.41	(METHOD UPDATE-HULL- SCALE HULL-IMAGE)	396
2.4.3.4.42	(METHOD DRAW-HULL- IMAGE HULL-IMAGE).....	396
2.4.3.4.43	HULL-IMAGE	397
2.4.3.4.44	SQ-TURRET-IMAGE.....	397
2.4.3.4.45	(METHOD UPDATE-TURRET- SCALE SQ-TURRET-IMAGE).....	397
2.4.3.4.46	(METHOD DRAW-TURRET- IMAGE SQ-TURRET-IMAGE).....	398
2.4.3.4.47	SQ-TURRET-IMAGE.....	398
2.4.3.4.48	RD-TURRET-IMAGE.....	398
2.4.3.4.49	(METHOD UPDATE-TURRET- SCALE RD-TURRET-IMAGE).....	399
2.4.3.4.50	(METHOD DRAW-TURRET- IMAGE RD-TURRET-IMAGE)	399
2.4.3.4.51	RD-TURRET-IMAGE.....	400
2.4.3.4.52	A-COMPARTMENT-IMAGE.....	400
2.4.3.4.53	(METHOD UPDATE- COMPARTMENT-SCALE A- COMPARTMENT-IMAGE)	400
2.4.3.4.54	(METHOD DRAW- COMPARTMENT-IMAGE A- COMPARTMENT-IMAGE).....	400
2.4.3.4.55	A-COMPARTMENT-IMAGE.....	401
2.4.3.4.56	B-COMPARTMENT-IMAGE.....	401
2.4.3.4.57	(METHOD UPDATE- COMPARTMENT-SCALE B- COMPARTMENT-IMAGE)	402
2.4.3.4.58	(METHOD DRAW- COMPARTMENT-IMAGE B- COMPARTMENT-IMAGE).....	402
2.4.3.4.59	B-COMPARTMENT-IMAGE.....	402
2.4.3.4.60	MISSILE-IMAGE.....	403

2.4.3.4.61	(METHOD UPDATE-MISSILE-SCALE MISSILE-IMAGE).....	403
2.4.3.4.62	(METHOD DRAW-MISSILE-IMAGE MISSILE-IMAGE)	403
2.4.3.4.63	MISSILE-IMAGE.....	404
2.4.3.4.64	TANK-IMAGE.....	404
2.4.3.4.65	TANK-IMAGE.....	404
2.4.3.4.66	MECH-IMAGE.....	404
2.4.3.4.67	MECH-IMAGE.....	405
2.4.3.4.68	AMMO-TRUCK-IMAGE.....	405
2.4.3.4.69	AMMO-TRUCK-IMAGE.....	405
2.4.3.4.70	FUEL-TRUCK-IMAGE	406
2.4.3.4.71	FUEL-TRUCK-IMAGE	406
2.4.3.4.72	SUPPLY-TRUCK-IMAGE.....	406
2.4.3.4.73	SUPPLY-TRUCK-IMAGE.....	407
2.4.3.4.74	MORTAR-IMAGE.....	407
2.4.3.4.75	MORTAR-IMAGE.....	407
2.4.3.4.76	HOWITZER-IMAGE.....	407
2.4.3.4.77	HOWITZER-IMAGE.....	408
2.4.3.4.78	COMMAND-POST-IMAGE.....	408
2.4.3.4.79	COMMAND-POST-IMAGE.....	408
2.4.3.4.80	UNKNOWN-VEHICLE-IMAGE....	409
2.4.3.4.81	UNKNOWN-VEHICLE-IMAGE....	409
2.4.3.4.82	SMOKE-CLOUD-IMAGE.....	409
2.4.3.4.83	SMOKE-CLOUD-IMAGE.....	409
2.4.3.4.84	FAADS-IMAGE.....	410
2.4.3.4.85	FAADS-IMAGE.....	410
2.4.3.4.86	*IMAGE-ARRAY*	410
2.4.3.4.87	*LOCAL-IMAGE-TABLE*	411
2.4.3.4.88	*REMOTE-IMAGE-TABLE*	411
2.4.3.4.89	INIT-IMAGES	411
2.4.3.4.90	Init Images	412
2.4.3.4.91	'IMAGE-FOR-VEHICLE.....	412
2.4.3.4.92	IMAGE-FOR-VEHICLE.....	412
2.4.3.5	CSU simnet-objects>new-draw-vehicles.lisp	413
2.4.3.5.1	$\pi/8$	413
2.4.3.5.2	$3\pi/8$	413

2.4.3.5.3	$5\pi/8$	414
2.4.3.5.4	$7\pi/8$	414
2.4.3.5.5	$9\pi/8$	414
2.4.3.5.6	$11\pi/8$	414
2.4.3.5.7	$13\pi/8$	415
2.4.3.5.8	$15\pi/8$	415
2.4.3.5.9	FIND-ICON-ROTATION.....	415
2.4.3.5.10	*ICON-TABLE*	416
2.4.3.5.11	*ICON-HASH-TABLE*.....	416
2.4.3.5.12	INIT-VEHICLE-ICON-TABLE.....	416
2.4.3.5.13	VEHICLE-ICON.....	417
2.4.3.5.14	DRAW-VEHICLE-ICON	417
2.4.3.5.15	DRAW-VEHICLE	417
2.4.3.6	CSU simnet-objects>draw-effects	418
2.4.3.6.1	DRAW-IMPACT.....	418
2.4.3.6.2	ERASE-IMPACT	419
2.4.3.6.3	AMMO-TYPE-RADIUS	419
2.4.3.6.4	MINE-AMMO-TYPE.....	419
2.4.3.6.5	HANDLE-ARTY.....	420
2.4.3.6.6	DRAW-ARTY	420
2.4.3.6.7	ERASE-ELASPED-EFFECTS	421
2.4.3.7	CSU simnet-objects>draw-units	421
2.4.3.7.1	*UNIT-ICON-TABLE*.....	421
2.4.3.7.2	INIT-UNIT-ICON-TABLE.....	421
2.4.3.7.3	Init Icons	422
2.4.3.7.4	UNIT-ICON	422
2.4.3.7.5	DRAW-UNIT.....	422
2.4.3.7.6	'(DRAW-PLATOON DRAW- SCOUT-PLATOON DRAW-IVIS- PLATOON DRAW-COMPANY DRAW-BATTALION DRAW- PAIR.....	423
2.5	WORLD STATE CSC.....	424
2.5.1	CSU simnet-objects>macros.lisp	424
2.5.1.1	ACCESS-ID	424
2.5.1.2	ACCESS-VEHICLE-INSTANCE.....	425
2.5.1.3	ACCESS-NEW-FLAG	425

2.5.1.4	SET-DRAWN-FLAG.....	425
2.5.1.5	SET-NEW-FLAG.....	426
2.5.1.6	LOOKUP-ID.....	426
2.5.1.7	SET-ID	426
2.5.1.8	ACCESS-PAINTED-FLAG	427
2.5.1.9	ASSOCIATE-VEHICLE-HOLDER	427
2.5.1.10	IS-STATUS.....	427
2.5.1.11	DEFINE-ARRAY-ACCESSORS	428
2.5.1.12	X-COMP	428
2.5.1.13	Y-COMP	428
2.5.1.14	Z-COMP.....	429
2.5.1.15	DEFINE-FLAVOR-ARRAY-ACCESSORS.....	429
2.5.2	CSU objects>defobject.lisp.....	429
2.5.2.1	The SAF Object Hierarchy	430
2.5.2.2	*ALL-OBJECTS*.....	430
2.5.2.3	GENERATE-OBJECT-CLASS-SLOT- METHODS.....	431
2.5.2.4	DEFINE-PREDICATE-METHOD.....	431
2.5.2.5	DEFOBJECT	431
2.5.3	CSU objects>simnet-name-mixin.lisp.....	431
2.5.3.1	SIMNET-NAME-MIXIN	432
2.5.3.2	(METHOD UNIT-NAME SIMNET-NAME- MIXIN).....	432
2.5.3.3	(METHOD SET-UNIT-NAME SIMNET-NAME- MIXIN).....	432
2.5.3.4	(METHOD CLEAR-UNIT-NAME SIMNET- NAME-MIXIN).....	432
2.5.3.5	CONVERT-TYPE-FOR-NAME	433
2.5.3.6	CONVERT-APPEARANCE-FOR-NAME	433
2.5.3.7	MAKE-BATTALION-NAME	433
2.5.3.8	(METHOD MAKE-UNIT-NAME SIMNET- NAME-MIXIN).....	434
2.5.3.9	SIMNET-NAME-MIXIN	434
2.5.4	CSU objects>gunner.lisp	434
2.5.4.1	*MARKSMAN*	434
2.5.4.2	*COMPETENT*	435
2.5.4.3	*NOVICE*	435
2.5.4.4	SET-GLOBAL-FIRE-PARAMETERS.....	436

2.5.4.5	GUNNER.....	436
2.5.4.6	(METHOD GET-GUNNER-PARMS GUNNER).....	436
2.5.4.7	(METHOD SET-GUNNER-PARMS GUNNER)....	436
2.5.4.8	(METHOD SPECIFY-RULES-OF- ENGAGEMENT GUNNER).....	437
2.5.4.9	GUNNER.....	437
2.5.5	CSU objects>simnet-agent.lisp	438
2.5.5.1	SIMNET-AGENT.....	438
2.5.5.2	(METHOD MAKE-INSTANCE SIMNET- AGENT AFTER).....	439
2.5.5.3	(METHOD PRINT-SELF SIMNET-AGENT).....	439
2.5.5.4	(METHOD VEHICLEP SIMNET-AGENT).....	439
2.5.5.5	(METHOD COMPOSITE-OBJECT-P SIMNET- AGENT).....	440
2.5.5.6	(METHOD SET-VEHICLE-LOADS SIMNET- AGENT).....	440
2.5.5.7	(METHOD REINIT SIMNET-AGENT)	440
2.5.5.8	(METHOD MAYBE-REPARSE- SUBORDINATES SIMNET-AGENT)	440
2.5.5.9	(METHOD GET-SUBORDINATES SIMNET- AGENT).....	441
2.5.5.10	(METHOD SET-SUBORDINATES SIMNET- AGENT).....	441
2.5.5.11	(METHOD GET-SUBORDINATES- INSTANCES SIMNET-AGENT)	441
2.5.5.12	(METHOD SET-SUBORDINATES- INSTANCES SIMNET-AGENT)	441
2.5.5.13	GET-SUBORDINATES-INSTANCES.....	442
2.5.5.14	GET-SUBORDINATES	442
2.5.5.15	(METHOD GET-ALL-SUBORDINATES SIMNET-AGENT).....	442
2.5.5.16	'(GET-SUPERIOR SET-SUPERIOR GET- SUPERIOR-INSTANCE SET-SUPERIOR- INSTANCE GET-ALL-SUPERIORS).....	443
2.5.5.17	(METHOD GET-SUPERIOR SIMNET- AGENT).....	443
2.5.5.18	(METHOD SET-SUPERIOR SIMNET-AGENT)....	443
2.5.5.19	(METHOD GET-SUPERIOR-INSTANCE SIMNET-AGENT).....	443

2.5.5.20	(METHOD SET-SUPERIOR-INSTANCE SIMNET-AGENT).....	444
2.5.5.21	GET-SUPERIOR	444
2.5.5.22	GET-SUPERIOR-INSTANCE.....	444
2.5.5.23	(METHOD POSSIBLE-FORMATIONS SIMNET-AGENT).....	444
2.5.5.24	(METHOD POSSIBLE-CIIS SIMNET- AGENT).....	445
2.5.5.25	(METHOD HIGHLIGHT SIMNET-AGENT)	445
2.5.5.26	(METHOD HIGHLIGHT SIMNET-AGENT BEFORE)	446
2.5.5.27	(METHOD ALU SIMNET-AGENT).....	446
2.5.5.28	(METHOD COUNTRY SIMNET-AGENT).....	447
2.5.5.29	(METHOD GET-TEMPLATE SIMNET- AGENT).....	448
2.5.5.30	(ERASE SIMNET-AGENT).....	448
2.5.5.31	(METHOD ERASE SIMNET-AGENT BEFORE)	448
2.5.5.32	(DRAW SIMNET-AGENT)	448
2.5.5.33	(METHOD DRAW SIMNET-AGENT AFTER)	449
2.5.5.34	COM-OMNISCIENT-VIEW	449
2.5.5.35	COM-SAF OMNISCIENT-VIEW.....	449
2.5.5.36	COM-COMMANDERS-EYE-VIEW	450
2.5.5.37	COM-SAF-COMMANDERS-EYE-VIEW.....	450
2.5.5.38	UNHIGHLIGHT-VIEWPORTS.....	450
2.5.5.39	HIGHLIGHT-VIEWPORTS	451
2.5.5.40	(METHOD SHOW-INFERIORS SIMNET- AGENT).....	451
2.5.5.41	(METHOD HIDE-INFERIORS SIMNET- AGENT).....	451
2.5.5.42	MOUSE-GESTURE-ITEM-LIST.....	451
2.5.5.43	(METHOD SHOW-VEHICLE-INFO SIMNET- AGENT).....	452
2.5.5.44	(METHOD MOUSE-GESTURE-ITEM-LIST SIMNET-AGENT APPEND)	452
2.5.5.45	(METHOD MOUSE-GESTURE-MENU SIMNET-AGENT).....	453
2.5.5.46	(METHOD MOUSE-GESTURE SIMNET- AGENT).....	453
2.5.5.47	GET-A-VEHICLE-TO-FOLLOW.....	453

2.5.5.48	FACE-DIRECTION	454
2.5.5.49	*PRINT-CHANGE-STATUS-MESSAGES*.....	454
2.5.5.50	(METHOD UPDATE-POSITION SIMNET- AGENT).....	454
2.5.5.51	(METHOD UPDATE-APPEARANCE SIMNET- AGENT).....	455
2.5.5.52	(METHOD UPDATE-ECHELON SIMNET- AGENT).....	455
2.5.5.53	(METHOD FWA-P SIMNET-AGENT).....	456
2.5.5.54	(METHOD RWA-P SIMNET-AGENT)	456
2.5.5.55	(METHOD AIR-VEHICLE-P SIMNET- AGENT).....	456
2.5.5.56	(METHOD GROUND-VEHICLE-P SIMNET- AGENT).....	456
2.5.5.57	(METHOD RESUME-ALL-SUBORDINATES SIMNET-AGENT).....	456
2.5.5.58	(METHOD IMMEDIATE-INTERVENTION SIMNET-AGENT).....	457
2.5.5.59	(METHOD IVIS-CONTROL SIMNET-AGENT) ...	457
2.5.5.60	SIMNET-AGENT.....	457
2.5.5.61	SIMNET-AGENT.....	458
2.5.5.62	MOUSE-UNIT-OPERATIONS.....	459
2.5.6	CSU objects>composite-object.lisp	459
2.5.6.1	COMPOSITE-OBJECT	460
2.5.6.2	(METHOD SET-CONTINUE-MISSION COMPOSITE-OBJECT)	460
2.5.6.3	(METHOD IMMEDIATE-INTERVENTION- CHOICES COMPOSITE-OBJECT).....	460
2.5.6.4	(METHOD MOUSE-GESTURE-ITEM-LIST COMPOSITE-OBJECT APPEND).....	460
2.5.6.5	COMPOSITE-OBJECT	461
2.5.7	CSU objects>vehicle.lisp	461
2.5.7.1	VEHICLE	461
2.5.7.2	(METHOD DRAW VEHICLE).....	462
2.5.7.3	(METHOD ERASE VEHICLE)	462
2.5.7.4	(METHOD MOUSE-GESTURE-ITEM-LIST VEHICLE APPEND).....	463
2.5.7.5	(METHOD IMMEDIATE-INTERVENTION- CHOICES VEHICLE).....	463
2.5.7.6	(METHOD REINIT VEHICLE).....	463

2.5.7.7	VEHICLE	464
2.5.8	CSU simnet-objects>vehicle-tracking.lisp.....	464
2.5.8.1	MAP-OVER-ALL-VEHICLES.....	465
2.5.8.2	MAP-OVER-ALL-VEHICLE-HOLDERS	465
2.5.8.3	GET-VEHICLE-HOLDER.....	465
2.5.8.4	GET-VEHICLE	466
2.5.8.5	PAINTED-P	467
2.5.8.6	MAP-OVER-ALL-VEHICLES	468
2.5.8.7	MAP-PREDICATE-OVER-VEHICLES	468
2.5.8.8	GET-PREDICATE-ARGS.....	468
2.5.8.9	MAP-OVER-ALL-VEHICLE-HOLDERS	469
2.5.8.10	*TOP-LEVEL-UNITS*	469
2.5.8.11	'(TOP-LEVEL-UNITS LOCAL REMOTE)	470
2.5.8.12	TOP-LEVEL-UNITS	470
2.5.8.13	TOP-LEVEL-UNIT-P	470
2.5.8.14	CLEAR-TOP-LEVEL-UNITS.....	471
2.5.8.15	REMOVE-TOP-LEVEL-UNIT.....	471
2.5.8.16	ADD-TOP-LEVEL-UNIT.....	471
2.5.8.17	MOVE-TOP-LEVEL-UNIT-TO-FRONT	472
2.5.8.18	MOVE-TOP-LEVEL-UNIT-TO-BACK.....	472
2.5.8.19	LOCAL-TOP-LEVEL-UNIT-POSITION.....	472
2.5.8.20	INSERT-LOCAL-TOP-LEVEL-UNIT	473
2.5.8.21	MOVE-TOP-LEVEL-UNIT-UP.....	473
2.5.8.22	MOVE-TOP-LEVEL-UNIT-DOWN.....	473
2.5.8.23	ALL-CHILDREN	474
2.5.8.24	ALL-LOCAL-VEHICLES	474
2.5.8.25	HANDLE-NAN-ERROR	475
2.5.8.26	REDRAW-VEHICLES.....	475
2.5.8.27	ERASE-ALL-VEHICLES.....	476
2.5.8.28	*DISPLAY-UNIT-GRAPH-DELAY*	476
2.5.8.29	DELAYED-DISPLAY-UNIT-GRAPH.....	476
2.5.8.30	DELAYED-DISPLAY-UNIT-GRAPH-1	477
2.5.8.31	MAKE-AGENT	477
2.5.9	CSU objects>grapher-node.lisp.....	478
2.5.9.1	GRAPHER-NODE.....	479
2.5.9.2	GRAPHER-NODE.....	479

2.5.9.3	(METHOD GRAPHER-NODE-INFERIOR-NODES GRAPHER-NODE)	479
2.5.9.4	(METHOD GRAPHER-NODE-DRAW GRAPHER-NODE)	480
2.5.9.5	GRAPHER-NODE.....	480
2.5.10	CSU objects>object-grapher.lisp	480
2.5.10.1	OBJECT-COMPONENTS.....	481
2.5.10.2	PRESENT-OBJECT.....	481
2.5.10.3	OBJECT-DEPENDENTS.....	481
2.5.10.4	MAKE-OBJECT-GRAPHER-NODE	481
2.5.10.5	CLEAR-ALL-GRAPH-NODES.....	482
2.5.10.6	GET-PARENTLESS-OBJECTS.....	482
2.5.10.7	OBJECT-GRAPHER.....	482
2.5.10.8	(METHOD REDISPLAY-GRAPH OBJECT-GRAPHER).....	483
2.5.10.9	OBJECT-GRAPHER-NODE.....	483
2.5.10.10	GRAPHER-NODE-TO-FLAVOR-NAME.....	483
2.5.10.11	OBJECT-GRAPHER-NODE.....	483
2.5.10.12	(COM-GRAPH-OBJECTS MENU-ACCELERATOR Graph Objects).....	484
2.5.10.13	(COM-TOGGLE-INFERIOR-VISIBILITY)	484
2.5.10.14	TOGGLE-THIS-NODE	484
2.5.10.15	EDIT-OBJECT	484
2.6	SAF COMMAND PROTOCOL INTERFACE CSC.....	485
2.6.1	SAF Command Protocol (CP) CSC	485
2.6.1.1	CSU network>defstorage.lisp.....	486
2.6.1.1.1	(PROPERTY NET-FLOAT DEFSTORAGE-PROCESSOR).....	486
2.6.1.1.2	(PROPERTY NET-SHORT DEFSTORAGE-PROCESSOR).....	486
2.6.1.1.3	(PROPERTY NET-INT DEFSTORAGE-PROCESSOR).....	487
2.6.1.1.4	(PROPERTY NET-INT DEFSTORAGE-DESCRIBE)	487
2.6.1.1.5	DEFSTORAGE-STORE-NET-CHAR-SUBSTRING	487
2.6.1.1.6	DEFSTORAGE-MAKE-NET-CHAR-SUBSTRING	489
2.6.1.1.7	(PROPERTY NET-CHAR DEFSTORAGE-PROCESSOR).....	491

2.6.1.1.8	AREF-4-BYTES	491
2.6.1.1.9	(PROPERTY NET-DOUBLE DEFSTORAGE-PROCESSOR).....	492
2.6.1.2	CSU network>packet-layouts.lisp	492
2.6.1.2.1	NET-FLOAT.....	493
2.6.1.2.2	NET-DOUBLE	493
2.6.1.2.3	NET-INT.....	493
2.6.1.2.4	NET-SHORT	493
2.6.1.2.5	OPFOR-HEADER	493
2.6.1.2.6	RUDP-HDR	494
2.6.1.2.7	BURST-DESC	494
2.6.1.2.8	CREATION.....	494
2.6.1.2.9	MINEFIELD-CREATION	494
2.6.1.2.10	VEHICLE-STATUS.....	495
2.6.1.2.11	POSITION-DESCRIPTOR	495
2.6.1.2.12	WHERE-ARE-THEY.....	495
2.6.1.2.13	GROUND-IMPACT.....	495
2.6.1.2.14	VEHICLE-IMPACT	495
2.6.1.2.15	INDIRECT-FIRE	496
2.6.1.2.16	INTERVISIBILITY.....	496
2.6.1.2.17	NOTIFY.....	496
2.6.1.2.18	VEHICLE-DEATH	496
2.6.1.2.19	POSITION-DESC.....	497
2.6.1.2.20	CREATE-REQUEST	497
2.6.1.2.21	RESET-REQUEST	497
2.6.1.2.22	ARTY-REQUEST.....	497
2.6.1.2.23	READ-CONFIG-REQUEST	497
2.6.1.2.24	ATTACH-REQUEST.....	498
2.6.1.2.25	DETACH-REQUEST.....	498
2.6.1.2.26	POLL-REQUEST	498
2.6.1.2.27	MINEFIELD-REQUEST.....	498
2.6.1.2.28	RESUPPLY-REQUEST	499
2.6.1.2.29	TELEPORT-REQUEST.....	499
2.6.1.2.30	TARGETING-REQUEST	499
2.6.1.2.31	MACHINE-STATUS.....	499
2.6.1.2.32	DISCONNECT-REQUEST.....	499

2.6.1.2.33	QUERY-SUB-STATE- REQUEST	500
2.6.1.2.34	STATUS-REPORT.....	500
2.6.1.2.35	SUB-STATE.....	500
2.6.1.2.36	IVIS-CONTACT	500
2.6.1.2.37	IVIS-SPOT.....	501
2.6.1.2.38	IVIS-SHELL.....	501
2.6.1.2.39	IVIS-CONTROL-REQUEST.....	501
2.6.1.2.40	IVIS-FINE-CONTROL- REQUEST	501
2.6.1.2.41	CONTINUE-MISSION- REQUEST	501
2.6.1.2.42	XYPOINT.....	502
2.6.1.2.43	ASSIGN-ROUTE-REQUEST.....	502
2.6.1.2.44	VEHICLE-POSITION- DESCRIPTOR.....	502
2.6.1.2.45	VEHICLE-APPEARANCE- DESCRIPTOR.....	502
2.6.1.2.46	VEHICLE-ECHELON- DESCRIPTOR.....	503
2.6.1.2.47	VEHICLE-PAE.....	503
2.6.1.2.48	VEHICLE-POSITION.....	503
2.6.1.2.49	VEHICLE-POSITION-POLL- COMPLETED	503
2.6.1.2.50	VEHICLE-APPEARANCE.....	503
2.6.1.2.51	VEHICLE-ECHELON	504
2.6.1.2.52	GENERIC-MESSAGE.....	504
2.6.1.2.53	CM-ID	504
2.6.1.2.54	CM-POINT-LIST	504
2.6.1.2.55	POINT-REQUEST.....	505
2.6.1.2.56	AREA-REQUEST.....	505
2.6.1.2.57	ZONE-REQUEST.....	505
2.6.1.2.58	LINE-REQUEST.....	505
2.6.1.2.59	ROUTE-PT	505
2.6.1.2.60	ROUTE-REQUEST.....	506
2.6.1.2.61	DELETE-OVERLAY-REQUEST	506
2.6.1.2.62	EXECUTE-OVERLAY- REQUEST	506
2.6.1.2.63	DELETE-CM-REQUEST	506

2.6.1.2.64	HALT-REQUEST.....	507
2.6.1.2.65	RESUME-REQUEST	507
2.6.1.2.66	HOLD-REQUEST	507
2.6.1.2.67	CHANGE-SPEED-REQUEST	507
2.6.1.2.68	CHANGE-ALTITUDE- REQUEST	507
2.6.1.2.69	CHANGE-FORMATION- REQUEST	508
2.6.1.2.70	FOLLOW-VEHICLE-REQUEST.....	508
2.6.1.2.71	SIMULATOR-IN-COMMAND- REQUEST	508
2.6.1.2.72	GO-TO-POINT-REQUEST.....	508
2.6.1.2.73	LAND-REQUEST	509
2.6.1.2.74	RESUME-MISSION-REQUEST	509
2.6.1.2.75	FACE-DIRECTION-REQUEST	509
2.6.1.2.76	ENROUTE-MOVEMENT- REQUEST	509
2.6.1.2.77	STEALTH-POS	509
2.6.1.2.78	ATTACH-STEALTH-REQUEST.....	510
2.6.1.2.79	REJOIN-UNIT-REQUEST	510
2.6.1.2.80	ATTACK-REQUEST.....	510
2.6.1.2.81	VEHICLE-LOAD	510
2.6.1.2.82	VEHICLE-REINIT-REQUEST	511
2.6.1.2.83	CHECK-STATION-REQUEST.....	511
2.6.2.	Connection CSC	511
2.6.2.1	CSU network>connection.lisp	511
2.6.2.1.1	SIMNET.....	511
2.6.2.1.2	*TARGET-NUMBER-OF- WIRED-PACKET-BUFFERS*.....	512
2.6.2.1.3	INIT-CONN	512
2.6.2.1.4	INITIALIZE-CONNECTION	512
2.6.2.1.5	SPECIFY-SIMNET-PORT	513
2.6.2.1.6	INIT-CONN-1.....	513
2.6.2.1.7	BUSY-WAIT-ON-CONN	514
2.6.2.1.8	CONN-P	514
2.6.2.1.9	STANDALONEP	514
2.6.2.1.10	EXIT-CONN	515
2.6.2.1.11	UI-EXIT-CONNECTION	515

2.6.2.2	CSU network>ip-tcp-patch.lisp	516
2.6.2.2.1	(METHOD GIVE-BACK-BUFFERS UDP-CONN)	516
2.6.2.2.2	INHIBIT-FDEFINE-WARNINGS	516
2.6.2.2.3	(METHOD PACKET-BUFFER-PANIC UDP-PROTOCOL)	516
2.6.2.2.4	INHIBIT-FDEFINE-WARNINGS	516
2.6.2.3	CSU network>vars.lisp	517
2.6.2.3.1	GET-HOSTS-WITH-SIMNET-SERVICE	517
2.6.2.3.2	GET-LOCAL-HOST-SAF-PORT	517
2.6.2.3.3	COM-SHOW-SAF-PORT	518
2.6.2.3.4	COM-SAF-SHOW-PORT	518
2.6.2.3.5	SIMULATION-HOST	518
2.6.2.3.6	RETRANSMIT_PERIOD	519
2.6.2.3.7	TRANSMIT_WARNING_LENGTH	519
2.6.2.3.8	MISSION-CONTROL-AWAIT	519
2.6.2.3.9	MISSION-CONTROL-NOTIFY	519
2.6.2.3.10	MISSION-CONTROL-IMMEDIATE	520
2.6.2.3.11	MISSION-CONTROL-ABORT	520
2.6.2.3.12	MISSION-CONTROL-NODISTRIBUTE	520
2.6.2.3.13	CREATION	520
2.6.2.3.14	WHERE-ARE-THEY	520
2.6.2.3.15	GROUND-IMPACT	521
2.6.2.3.16	VEHICLE-IMPACT	521
2.6.2.3.17	INTERVISIBILITY	521
2.6.2.3.18	NOTIFY	521
2.6.2.3.19	VEHICLE-STATUS	522
2.6.2.3.20	INDIRECT-FIRE	522
2.6.2.3.21	REGISTER	522
2.6.2.3.22	UNREGISTER	523
2.6.2.3.23	ACTIVITY-COMPLETE	523
2.6.2.3.24	RADIO-STATUS	523

2.6.2.3.25	RADIO-MESSAGE.....	523
2.6.2.3.26	MACHINE-STATUS.....	523
2.6.2.3.27	MINEFIELD-CREATION	524
2.6.2.3.28	SUB-STATE.....	524
2.6.2.3.29	IVIS-CONTACT.....	524
2.6.2.3.30	IVIS-SPOT.....	524
2.6.2.3.31	IVIS-SHELL.....	525
2.6.2.3.32	VEHICLE-PAE.....	525
2.6.2.3.33	VEHICLE-POSITION.....	525
2.6.2.3.34	VEHICLE-POSITION-POLL- COMPLETED	525
2.6.2.3.35	VEHICLE-APPEARANCE.....	525
2.6.2.3.36	VEHICLE-ECHELON	526
2.6.2.3.37	GENERIC-MESSAGE.....	526
2.6.2.3.38	STEALTH-POS	526
2.6.2.3.39	VEHICLE-LOAD	526
2.6.2.3.40	CREATE	527
2.6.2.3.41	RESET.....	527
2.6.2.3.42	ARTY.....	527
2.6.2.3.43	READ-CONFIG.....	527
2.6.2.3.44	VEHICLE-REINIT	528
2.6.2.3.45	RESUME.....	528
2.6.2.3.46	RESUPPLY.....	528
2.6.2.3.47	ATTACH.....	528
2.6.2.3.48	DETACH.....	529
2.6.2.3.49	TELEPORT	529
2.6.2.3.50	READ-ACTIVITIES.....	529
2.6.2.3.51	START-ACTIVITY	529
2.6.2.3.52	POLL	529
2.6.2.3.53	RADIO-COMMAND	530
2.6.2.3.54	MINEFIELD.....	530
2.6.2.3.55	DISCONNECT.....	530
2.6.2.3.56	QUERY-SUB-STATE.....	530
2.6.2.3.57	IVIS-CONTROL	531
2.6.2.3.58	IVIS-FINE-CONTROL	531
2.6.2.3.59	CONTINUE-MISSION	531

2.6.2.3.60	ASSIGN-ROUTE.....	532
2.6.2.3.61	POINT.....	532
2.6.2.3.62	AREA.....	535
2.6.2.3.63	ZONE.....	535
2.6.2.3.64	LINE.....	536
2.6.2.3.65	ROUTE.....	536
2.6.2.3.66	DELETE-OVERLAY	537
2.6.2.3.67	EXECUTE-OVERLAY.....	538
2.6.2.3.68	HALT.....	538
2.6.2.3.69	CHANGE-SPEED	538
2.6.2.3.70	CHANGE-FORMATION.....	539
2.6.2.3.71	DELETE-CM	539
2.6.2.3.72	FOLLOW-VEHICLE.....	540
2.6.2.3.73	GO-TO-POINT.....	540
2.6.2.3.74	RESUME-MISSION	540
2.6.2.3.75	FACE-DIRECTION	540
2.6.2.3.76	TARGETING.....	541
2.6.2.3.77	ATTACH-STEALTH.....	541
2.6.2.3.78	HOLD.....	541
2.6.2.3.79	CHANGE-ALTITUDE.....	542
2.6.2.3.80	ENROUTE-MOVEMENT	542
2.6.2.3.81	SIMULATOR-IN-COMMAND.....	542
2.6.2.3.82	REJOIN-UNIT	542
2.6.2.3.83	LAND.....	543
2.6.2.3.84	ATTACK.....	543
2.6.2.3.85	CHECK-STATION.....	543
2.6.2.3.86	RUNNING-FIRE-ATTACK.....	543
2.6.2.3.87	POP-UP-ATTACK	544
2.6.2.3.88	WHERE-ARE-THEY-REQUEST	544
2.6.2.3.89	VEHICLE-STATUS-REQUEST.....	544
2.6.2.3.90	TACTICS-NATO	544
2.6.2.3.91	TACTICS-WARSAW	545
2.6.2.3.92	OPFOR	545
2.6.2.3.93	BLUEFOR	546
2.6.2.3.94	RESET-ALL-VEHICLES.....	546
2.6.2.3.95	ARTY-TYPE-GROUND.....	546

2.6.2.3.96	ARTY-TYPE-VEHICLE	547
2.6.2.3.97	ARTY-TYPE-DEATH.....	547
2.6.2.3.98	READ-FORMATIONS.....	547
2.6.2.3.99	READ-VEHICLE-PARMS	547
2.6.2.3.100	READ-UNIT-CONFIG	548
2.6.2.3.101	READ-HITMODELS	548
2.6.2.3.102	READ-DAMAGES.....	548
2.6.2.3.103	READ-DETECTIONS.....	548
2.6.2.3.104	RESUPPLY-TYPE-FUEL.....	548
2.6.2.3.105	RESUPPLY-TYPE-AMMO	549
2.6.2.3.106	HOLD_FIRE.....	549
2.6.2.3.107	FIRE_AT_WILL	549
2.6.2.3.108	FIRE_AT_POSITION.....	549
2.6.2.3.109	FIRE_AT_WHAT_LEADER_ SHOOTS	550
2.6.2.3.110	FIRE_AT_DESIGNATED_ TARGETS	550
2.6.2.3.111	MAX-WEAPONS.....	550
2.6.2.3.112	*PRETTY-WEAPON-TABLE*.....	550
2.6.2.3.113	DEFINE-SIMNET-WEAPON.....	551
2.6.2.3.114	WEAPON-105MM.....	551
2.6.2.3.115	WEAPON-25MM	551
2.6.2.3.116	WEAPON-SAGGER	551
2.6.2.3.117	WEAPON-SPIRAL	552
2.6.2.3.118	WEAPON-ROCKET	552
2.6.2.3.119	WEAPON-BOMB	552
2.6.2.3.120	WEAPON-ADA-MISSILE	552
2.6.2.3.121	MAX-VEH-TYPES	553
2.6.2.3.122	VEH-SPECIAL	553
2.6.2.3.123	VEH-MAIN-BATTLE-TANK.....	553
2.6.2.3.124	VEH-PERSONNEL-CARRIER.....	553
2.6.2.3.125	VEH-COMMAND-POST	554
2.6.2.3.126	VEH-AMMUNITION-TRUCK.....	554
2.6.2.3.127	VEH-FUEL-TRUCK	554
2.6.2.3.128	VEH-SUPPLY-TRUCK	554
2.6.2.3.129	VEH-MORTAR-CARRIER.....	555

2.6.2.3.130	VEH-SP-HOWITZER.....	555
2.6.2.3.131	VEH-RECOVERY-VEHICLE.....	555
2.6.2.3.132	VEH-FIST-VEHICLE.....	555
2.6.2.3.133	VEH-ATTACK-HELICOPTER.....	556
2.6.2.3.134	VEH-SCOUT-HELICOPTER.....	556
2.6.2.3.135	VEH-FIGHTER-BOMBER-A.....	556
2.6.2.3.136	VEH-FIGHTER-BOMBER.....	556
2.6.2.3.137	VEH-SMOKE-CLOUD	557
2.6.2.3.138	VEH-ANTI-AIRCRAFT	557
2.6.2.3.139	VEH-TANKER-AIRCRAFT	557
2.6.2.3.140	VEH-AWACS-AIRCRAFT.....	558
2.6.2.3.141	VEH-FIGHTER-BOMBER-B.....	558
2.6.2.3.142	VEH-FIGHTER-BOMBER-C.....	558
2.6.2.3.143	VEH-FIGHTER-BOMBER-D.....	558
2.6.2.3.144	VEH-INTERCEPTOR.....	558
2.6.2.3.145	VEH-MISSILE	559
2.6.2.3.146	*PRETTY-TYPE-TABLE*	559
2.6.2.3.147	(AREF *PRETTY-TYPE-TABLE* 0).....	559
2.6.2.3.148	HEAT-25.....	559
2.6.2.3.149	HEAT-105	560
2.6.2.3.150	SABOT-25	560
2.6.2.3.151	SABOT-105.....	560
2.6.2.3.152	TOW-2K	560
2.6.2.3.153	FAAD-MISSILE	560
2.6.2.3.154	HELLFIRE-MISSILE	561
2.6.2.3.155	MAVERICK-MISSILE.....	561
2.6.2.3.156	DRAGON-MISSILE.....	561
2.6.2.3.157	BOMB500.....	561
2.6.2.3.158	HE107	562
2.6.2.3.159	HE155	562
2.6.2.3.160	WP107.....	562
2.6.2.3.161	FUZE-POINT-DETONATING	562
2.6.2.3.162	FUZE-PROXIMITY	563
2.6.2.3.163	LOCAL	563
2.6.2.3.164	REMOTE.....	564

2.6.2.3.165	VEH-TARGET-PERSON.....	564
2.6.2.3.166	VEH-TARGET-VEH	564
2.6.2.3.167	VEH-SAFETY-FAN-L.....	565
2.6.2.3.168	VEH-SAFETY-FAN-R.....	565
2.6.2.3.169	VEH-TARGET-BORE	565
2.6.2.3.170	INDIRECT-FIRE-BURST- HEIGHT	565
2.6.2.3.171	*RELATIVE-DISPLAY*	565
2.6.2.3.172	UNHANDLED-MESSAGE- HALT.....	566
2.6.2.3.173	PRINT-OUTPUT-COMMANDS	566
2.6.2.3.174	*WAITING-FOR-RESET*.....	566
2.6.2.4	CSU network>top-level.lisp.....	566
2.6.2.4.1	GET-OFFOR-SUB-PACKET.....	567
2.6.2.4.2	COMPLETE-C2-RESET.....	567
2.6.2.4.3	*RESET-WAIT-LIMIT*	568
2.6.2.4.4	RESET-SIM	568
2.6.3	Reliable Universal Datagram Protocol (RUDP) CSC.....	569
2.6.3.1	CSU rudp>vars.lisp	569
2.6.3.1.1	*RUDP-AREA*	569
2.6.3.1.2	*SIM-CONN*	570
2.6.3.1.3	*SERVICE-ACCESS-PATH*	572
2.6.3.1.4	*RUDP-TYPE-SYNCH*	572
2.6.3.1.5	*RUDP-TYPE-DATA*	572
2.6.3.1.6	*RUDP-TYPE-ACK*	573
2.6.3.1.7	*PKT*	573
2.6.3.1.8	*PKT-START*	575
2.6.3.1.9	*PKT-END*	577
2.6.3.1.10	*PKT-PTR*	579
2.6.3.1.11	*RUDP-PACKETS- PROCESSED*	581
2.6.3.1.12	*LAST-SEQUENCE-IN*	581
2.6.3.1.13	*NEXT-SEQUENCE-OUT*	583
2.6.3.1.14	*ACK-NEEDED*	585
2.6.3.1.15	*RETRANSMIT-TIMER*	587
2.6.3.1.16	*RETRANSMIT-QUEUE*	587
2.6.3.1.17	*RUDP-OUTPUT-STREAM*	588

2.6.3.1.18	*RUDP-OUTPUT-STREAM*	588
2.6.3.1.19	*PACKET-REQUEST-QUEUE*.....	589
2.6.3.1.20	*PACKET-IMMEDIATE-QUEUE*.....	589
2.6.3.1.21	*RUDP-RECEIVE-QUEUE*	590
2.6.3.1.22	*LAST-PACKET-IN-TIME*.....	590
2.6.3.1.23	*LAST-PACKET-IN-WARNING-STATE*.....	591
2.6.3.1.24	CVV-PRINT-60THS	591
2.6.3.1.25	CVV-READ-60THS	591
2.6.3.1.26	(GET '60THS 'CHOOSE-VARIABLE-VALUES-KEYWORD).....	591
2.6.3.1.27	*RUDP-OPTIONS*	592
2.6.3.1.28	*LAST-PACKET-IN-SHUTDOWN-STATE*	592
2.6.3.1.29	*BARE-ACK-PERIOD*	592
2.6.3.1.30	*RETRANSMIT-PERIOD*	592
2.6.3.1.31	*TRANSMIT-QUEUE-WARNING-LENGTH*	593
2.6.3.1.32	*TRANSMIT-QUEUE-ERROR-LENGTH*	593
2.6.3.1.33	*MAX-RECEIVE-QUEUE-LENGTH*	593
2.6.3.1.34	*DEBUG-RUDP*	593
2.6.3.1.35	*IVIS-OPTIONS*	594
2.6.3.1.36	*IVIS-OPTIONS*	594
2.6.3.1.37	*REAPPEAR-LATENCY*	594
2.6.3.1.38	*RANGE-THRESHOLD*.....	595
2.6.3.1.39	*UPDATE-RATE*.....	595
2.6.3.1.40	*CLUSTER-DISTANCE*.....	595
2.6.3.2	CSU rudp>outgoing.lisp.....	596
2.6.3.2.1	PREPEND-RUDP-HEADER.....	596
2.6.3.2.2	TRANSMIT-MSG	598
2.6.3.2.3	GET-RUDP-BUFFER	600
2.6.3.2.4	FLUSH-RUDP-RETRANSMIT-BUFFERS	600
2.6.3.2.5	FLUSH-RUDP-PENDING-TRANSMIT-BUFFERS	601

2.6.3.2.6	DO-ALL-QUEUED-REQUESTS	601
2.6.3.2.7	PROCESS-OUTGOING-RUDP.....	601
2.6.3.2.8	'(NET-MSG REQUEST IMMEDIATE)	602
2.6.3.2.9	NET-MSG	602
2.6.3.2.10	PUT-MSG-IN-RETRANSMIT- QUEUE.....	603
2.6.3.2.11	DEQUEUE-OUTGOING	606
2.6.3.2.12	CHECK-FOR-RETRANSMIT- OR-ACK	606
2.6.3.2.13	TRANSMIT-SYNCH	607
2.6.3.2.14	TRANSMIT-ACK	608
2.6.3.2.15	RETRANSMIT-QUEUED- PACKET	609
2.6.3.2.16	RETRANSMIT-ALL-QUEUED- PACKETS	610
2.6.3.3	CSU rudp>incoming.lisp	610
2.6.3.3.1	FLUSH-RUDP-RECEIVE- BUFFERS	611
2.6.3.3.2	PROCESS-INCOMING-RUDP	611
2.6.3.3.3	POLL-FOR-MESSAGES	611
2.6.3.3.4	PROCESS-INCOMING-RUDP- PACKET	612
2.6.3.3.5	PROCESS-RECEIVED- PACKETS	613
2.6.3.3.6	PROCESS-SIM-PKT.....	613
2.6.3.3.7	PROCESS-ALL-MSG-S-IN-UDP- PKT.....	613
2.6.3.4	CSU rudp>utils.lisp	614
2.6.3.4.1	RUDP-PACKET	614
2.6.3.4.2	GET-RUDP-PACKET	614
2.6.3.4.3	FREE-RUDP-PACKET.....	615
2.6.3.4.4	RETRANSMIT-QUEUE-ITEM.....	615
2.6.3.4.5	MAKE-RETRANSMIT-QUEUE- ITEM.....	616
2.6.3.4.6	RECEIVE-QUEUE-ITEM	616
2.6.3.4.7	MAKE-RECEIVE-QUEUE-ITEM....	616
2.6.3.4.8	DEBUG-RUDP	617
2.6.3.4.9	RUDP-TRANSMIT-AND- RECEIVE	617

2.6.3.4.10	SIGNAL-RUDP-ERROR.....	617
2.6.3.4.11	FLUSH-ALL-RUDP-BUFFERS	618
2.6.4.	SAF Command Layer CSC.....	618
2.6.4.1	CSU rudp>handle-incoming.lisp.....	619
2.6.4.1.1	*NUMBER-OF-PACKET-TYPES*	619
2.6.4.1.2	*PACKET-HANDLER-FUNCTION-TABLE*	619
2.6.4.1.3	*PACKET-PRINT-FUNCTION-TABLE*	620
2.6.4.1.4	*PACKET-OPTIONS*	621
2.6.4.1.5	*PRINT-MESSAGES*	621
2.6.4.1.6	SET-HANDLER-FUNCTION	622
2.6.4.1.7	LOOKUP-HANDLER-FUNCTION	622
2.6.4.1.8	SET-PRINT-FUNCTION	622
2.6.4.1.9	LOOKUP-PRINT-FUNCTION.....	623
2.6.4.1.10	(COMPILE LOAD EVAL)	623
2.6.4.1.11	DEF-PACKET-HANDLER.....	623
2.6.4.1.12	VEHICLE-IMPACT	624
2.6.4.1.13	GROUND-IMPACT	624
2.6.4.1.14	INDIRECT-FIRE	624
2.6.4.1.15	RESET.....	624
2.6.4.1.16	MACHINE-STATUS.....	625
2.6.4.1.17	MINEFIELD-CREATION	625
2.6.4.1.18	SUB-STATE.....	625
2.6.4.1.19	IVIS-CONTACT	625
2.6.4.1.20	IVIS-SPOT.....	625
2.6.4.1.21	IVIS-SHELL.....	626
2.6.4.1.22	VEHICLE-POSITION.....	626
2.6.4.1.23	VEHICLE-POSITION-POLL-COMPLETED	626
2.6.4.1.24	VEHICLE-APPEARANCE.....	626
2.6.4.1.25	VEHICLE-ECHELON	627
2.6.4.1.26	VEHICLE-PAE.....	627
2.6.4.1.27	GENERIC-RADIO-MESSAGE.....	627
2.6.4.1.28	GENERIC-ERROR-MESSAGE	627
2.6.4.1.29	GENERIC-BEEP-MESSAGE.....	628

2.6.4.1.30	PRINT-MESSAGE	628
2.6.4.1.31	GENERIC-MESSAGE.....	628
2.6.4.1.32	*OLD-STEALTH- PARAMETERS*.....	628
2.6.4.1.33	STEALTH-POS	629
2.6.4.1.34	VEHICLE-LOAD	629
2.6.4.2	CSU network>commands.lisp	629
2.6.4.2.1	DEFSEND	629
2.6.4.2.2	SEND-CREATE.....	630
2.6.4.2.3	SEND-TARGETING.....	631
2.6.4.2.4	SEND-POLL.....	631
2.6.4.2.5	SEND-MINEFIELD	632
2.6.4.2.6	SEND-RESET	633
2.6.4.2.7	SEND-ARTY	633
2.6.4.2.8	SEND-READ-CONFIG.....	634
2.6.4.2.9	SEND-ATTACH	635
2.6.4.2.10	SEND-DETACH	635
2.6.4.2.11	SEND-RESUPPLY.....	636
2.6.4.2.12	SEND-TELEPORT	637
2.6.4.2.13	MAKE-ORTHOGONAL-LIST.....	637
2.6.4.2.14	*BOMBS-PER-PACKET*	638
2.6.4.2.15	*AMMO-TYPE*	638
2.6.4.2.16	*FUZE-TYPE*	638
2.6.4.2.17	*ARTY-TYPE*.....	639
2.6.4.2.18	*ARTY-SPREAD*.....	639
2.6.4.2.19	BOMB-BUTTON	639
2.6.4.2.20	SEND-DISCONNECT	640
2.6.4.2.21	SET-BOMB-PARAMETERS.....	641
2.6.4.2.22	SEND-QUERY-SUB-STATE.....	641
2.6.4.2.23	SEND-IVIS-CONTROL	642
2.6.4.2.24	SEND-IVIS-MESSAGES.....	643
2.6.4.2.25	SEND-IVIS-FINE-CONTROL.....	643
2.6.4.2.26	SEND-AN-IVIS-FINE- CONTROL-PACKET	644
2.6.4.2.27	SEND-AN-IVIS-FINE- CONTROL.....	644
2.6.4.2.28	SEND-CONTINUE-MISSION	644

2.6.4.2.29	SEND-ASSIGN-ROUTE	645
2.6.4.2.30	SEND-POINT	646
2.6.4.2.31	SEND-AREA	647
2.6.4.2.32	SEND-ZONE	648
2.6.4.2.33	SEND-LINE	648
2.6.4.2.34	SEND-ROUTE	649
2.6.4.2.35	SEND-DELETE-OVERLAY.....	650
2.6.4.2.36	SEND-EXECUTE-OVERLAY.....	651
2.6.4.2.37	SEND-DELETE-CM.....	652
2.6.4.2.38	SEND-HALT	652
2.6.4.2.39	SEND-RESUME.....	653
2.6.4.2.40	SEND-HOLD.....	654
2.6.4.2.41	SEND-CHANGE-SPEED	654
2.6.4.2.42	SEND-CHANGE-ALTITUDE	655
2.6.4.2.43	SEND-CHANGE-FORMATION	656
2.6.4.2.44	SEND-FOLLOW-VEHICLE	656
2.6.4.2.45	SEND-SIMULATOR-IN- COMMAND	657
2.6.4.2.46	SEND-GO-TO-POINT	658
2.6.4.2.47	SEND-LAND.....	658
2.6.4.2.48	SEND-RESUME-MISSION.....	659
2.6.4.2.49	SEND-FACE-DIRECTION.....	660
2.6.4.2.50	SEND-ENROUTE-MOVEMENT....	660
2.6.4.2.51	SEND-ATTACH-STEALTH	661
2.6.4.2.52	ATTACH-STEALTH.....	662
2.6.4.2.53	SEND-REJOIN-UNIT	662
2.6.4.2.54	SEND-ATTACK	663
2.6.4.2.55	SEND-VEHICLE-REINIT.....	663
2.6.4.2.56	SEND-CHECK-STATION	664
2.7	Globals CSC.....	665
2.7.1	CSU sys>constants.lisp.....	665
2.7.1.1	π	665
2.7.1.2	2π	666
2.7.1.3	180DEG	667
2.7.1.4	3200MIL	667
2.7.1.5	-180DEG	667

2.7.1.6	-3200MIL	667
2.7.1.7	90DEG.....	668
2.7.1.8	1600MIL	668
2.7.1.9	-90DEG.....	668
2.7.1.10	-1600MIL	669
2.7.1.11	360DEG	669
2.7.1.12	6400MIL	669
2.7.1.13	RAD-TO-DEG.....	669
2.7.1.14	DEG-TO-RAD.....	670
2.7.1.15	RAD-TO-MIL.....	670
2.7.1.16	MIL-TO-RAD.....	670
2.7.1.17	HALFPI.....	671
2.7.1.18	5-DEG.....	671
2.7.1.19	DEG-TO-MIL.....	671
2.7.1.20	UNKNOWN-HEADING	671
2.7.1.21	RUDP_TYPE_SYNCH.....	672
2.7.1.22	RUDP_TYPE_DATA.....	672
2.7.1.23	RUDP_TYPE_ACK.....	674
2.7.1.24	TEAM-NATO.....	674
2.7.1.25	TEAM-WARSAW-PACT.....	674
2.7.1.26	INVISIBLE	675
2.7.1.27	PARTLY_VISIBLE.....	675
2.7.1.28	VISIBLE	675
2.7.1.29	VEH-IMMOBILE	675
2.7.1.30	VEH-CANTFIRE	676
2.7.1.31	VEH-DESTROYED.....	676
2.7.1.32	VEH-OUT-OF-GAS.....	676
2.7.1.33	VEH-OUT-OF-AMMO.....	677
2.7.1.34	VEH-LANDED	677
2.7.1.35	VEH-RESUPPLYING	677
2.7.1.36	VEH-STUCK.....	677
2.7.1.37	MAX-VEHICLES.....	678
2.7.1.38	*MAX-VEHICLE-ID*	678
2.7.1.39	VEHICLE-ID-IRRELEVANT	678
2.7.2	CSU sys>vars.lisp.....	679
2.7.2.1	*SAF-INTERFACE-OPTIONS*	679

2.7.2.2	*SAF-DEBUG-OPTIONS*	679
2.7.2.3	*SAF-CONNECTION-OPTIONS*	679
2.7.2.4	*SAF-APPEARANCE-OPTIONS*	680
2.7.2.5	*DEFAULT-OUTPUT-COORDINATE-SYSTEM*	680
2.7.2.6	*SAF-INITIALIZATION-LIST*	680
2.7.2.7	*POLL-WHERE-ARE-THEY-FLAG*	680
2.7.2.8	*ALL-VEHICLES*	681
2.7.2.9	*VIEW-VEHICLE-ID*	681
2.7.2.10	ALIGNED-FOE	682
2.7.2.11	ALIGNED-OFFENSE	682
2.7.2.12	ALIGNED-DEFENSE	683
2.7.2.13	ALIGNED-FRIEND	684
2.7.2.14	ALIGNED-SCENARIO	684
2.7.2.15	ALIGNED-USSR	684
2.7.2.16	ALIGNED-US	685
2.7.2.17	ALIGNED-MIXED	685
2.7.2.18	COUNTRY-US	686
2.7.2.19	COUNTRY-USSR	686
2.7.2.20	DISTINGUISHED-FORCE	686
2.7.2.21	OTHER-FORCE	686
2.7.2.22	OBSERVER-FORCE	687
2.7.2.23	TARGET-FORCE	687
2.7.2.24	GODS-EYE-VIEW	687
2.7.2.25	NON-GODS-EYE-VIEW	687
2.7.2.26	COMMANDERS-EYE-VIEW	688
2.7.2.28	*FOE-ALLIANCE*	688
2.7.2.29	*TEAM*	689
2.7.2.30	*PVD-FRAME*	689
2.7.2.31	*PVD-DISPLAY*	689
2.7.2.32	*PVD-LEGEND*	692
2.7.2.33	*OFFENSE-ALU*	693
2.7.2.34	*DEFENSE-ALU*	693
2.7.2.35	*ERASE-EFFECTS-ALU*	693
2.7.2.36	*ERASE-VEHICLES-ALU*	694
2.7.2.37	*BOMB-EFFECTS-ALU*	694

2.7.2.38	*TRIM-ALU*	695
2.7.2.39	*WHITE-EFFECTS-ALU*	695
2.7.2.40	*YELLOW-EFFECTS-ALU*	695
2.7.2.41	*OPFOR-FRAME*	696
2.7.2.42	*OPFOR-IO*	697
2.7.2.43	*OPFOR-IO*	697
2.7.2.44	*RADIO-OUTPUT*	699
2.7.2.45	*BMI-PROGRAM*	699
2.7.2.46	*TERRAIN-OPTIONS*	700
2.7.2.47	*BATTLEFIELD-OBJECTS*	701
2.7.2.48	*BATTLEFIELD-OBJECTS*	701
2.7.2.49	*SANDBOX*	701
2.7.2.50	*ACTIVE-SANBOXES*	701
2.7.2.51	*WHERE-ARE-THEY-POLL-WAIT*	702
2.7.2.52	*WHERE-ARE-THEY-POLL-FREQUENCY*	702
2.7.2.53	*WHERE-ARE-THEY-PAINT-FLAG*	702
2.7.2.54	*PAINT-VEHICLES-AS-ICONS*	703
2.7.2.55	*STOP-UPDATE-PROCESS*	703
2.7.2.56	*INTERFACE-TO-UPDATE-PROCESS-QUEUE*	703
2.7.2.57	*NETWORK-TO-UPDATE-PROCESS-QUEUE*	704
2.7.2.58	*BFLY-TIME-OFFSET*	704
2.7.2.59	*ETIME*	705
2.7.2.61	*DEFAULT-UNIT-GRAFH-DELAY*	705
2.7.2.62	*COS-ARRAY*	705
2.7.2.63	*COS-ARRAY-MAX-INDEX*	706
2.7.2.64	*DRIBBLE-FLG*	706
2.7.2.65	*EXTRA-INFO*	706
2.7.2.66	*NEW-INTERFACE-FLG*	706
2.7.2.67	*EFFECTS-QUEUE*	707
2.7.2.68	*TARGET-TYPES*	707
2.7.2.69	*DISPOSITIONS*	707
2.7.2.70	*IVIS-TO-SIMNET*	708
2.7.2.71	*IVIS-TO-SBX*	708
2.7.2.72	SCENARIO-COUNTER	708
2.7.2.73	*SBX-UNIQUE-UNIT-ID*	708

2.7.2.74	UNIQUE_ID_IRRELEVANT.....	709
2.7.2.76	NEW-SBX-UNIQUE-UNIT-ID	709
2.7.2.77	RESET-SBX-UNIQUE-UNIT-ID.....	709
2.7.2.78	*SANDBOX-OBJECTS-ALIST*.....	710
2.7.2.79	ADD-SANDBOX-TO-ALIST	710
2.7.2.80	CLEAR-SANDBOX-ALIST.....	710
2.7.2.81	RETURN-AND-REMOVE-SANDBOX-FROM- ALIST	710
2.7.2.82	*PRETTY-ALIGNMENT-TABLE*.....	711
2.7.2.83	(AREF *PRETTY-ALIGNMENT-TABLE* ALIGNED-FOE).....	711
2.7.2.84	*MY-CONCEIVED-UNITS*	711
2.7.2.85	*ALL-OVERLAYS*	711
2.7.2.86	*DB-INSTANCES*	712
2.7.2.87	*STEALTH-SITE-NUMBER*.....	713
2.7.2.88	*STEALTH-HOST-NUMBER*	713
2.7.2.89	*LAST-UNITS-LENGTH*	713
2.7.2.90	*LAST-UNITS-SPEED*	714
2.7.2.91	*LAST-UNITS-ALTITUDE*	714
2.7.2.92	*BATTLEMASTER-PASSWORD*.....	714
2.7.2.93	HOLD-HOVER.....	714
2.7.2.94	HOLD-ORBIT.....	715
2.7.2.95	HOLD-RACETRACK.....	715
2.7.3	CSU sys>macros.lisp	715
2.7.3.1	MATH-TO-COMPASS.....	715
2.7.3.2	RADIANS-COMPASS-TO-RADIANS-MATH.....	716
2.7.3.3	RADIANS-MATH-TO-RADIANS-COMPASS.....	716
2.7.3.4	COMPASS-ANGLE.....	717
2.7.3.5	MATH-ANGLE.....	717
2.7.3.6	RADIANS-COMPASS-TO-MILS	717
2.7.3.7	RADIANS-MATH-TO-MILS	718
2.7.3.8	MILS-TO-RADIANS-COMPASS	718
2.7.3.9	MILS-TO-RADIANS-MATH	719
2.7.3.10	CVV-MILS-PRINTER	719
2.7.3.11	CVV-MILS-READER	720
2.7.3.12	(GET 'MILS 'CHOOSE-VARIABLE-VALUES- KEYWORD).....	720

2.7.3.13	SQ.....	720
2.7.3.14	*!.....	721
2.7.3.15	APPROX-COS.....	721
2.7.3.16	APPROX-SIN.....	721
2.7.3.17	ADD-TO-UPDATE-QUEUE	722
2.7.3.18	QUEUE-PUSH-LAST	723
2.7.3.19	QUEUE-ERASE-EFFECT.....	723
2.7.3.20	SAY.....	723
2.7.3.21	MAYBE-SAY.....	724
2.7.3.22	TALK.....	725
2.7.3.23	SAY-VARIABLES.....	725
2.7.3.24	SAY-VARS	725
2.7.3.25	SAY-FORM.....	726
2.7.3.26	SAY-LET.....	726
2.7.3.27	SAY-LET*	726
2.7.3.28	SAY-LET-AUX	726
2.7.3.29	WHEN-EIGHT-BIT-COLOR	727
2.7.3.30	UNLESS-EIGHT-BIT-COLOR.....	727
2.7.3.31	*BUTTERFLY-LOGIN-NAME*.....	727
2.7.3.32	*BUTTERFLY-PASSWORD*.....	728
2.7.3.33	WITH-AUTOMATIC-LOGIN	728
2.7.3.34	WITH-OPEN-FILE-ON-BUTTERFLY.....	729
2.7.3.35	HANDLE-LOGIN	730
2.7.3.36	ENQUEUE.....	731
2.7.3.37	DEQUEUE.....	731
2.7.3.38	LAST-ITEM-ON	732
2.7.3.39	NEXT-ITEM-OFF	732
2.7.3.40	MAPQUEUE	732
2.7.3.41	QUEUE-LENGTH.....	733
2.7.3.42	QUEUE-FOR-UPDATE-PROCESS	733
2.7.3.43	*NAN*	733
2.7.3.44	*BREAK-ON-NANS*	733
2.7.3.45	NANP	734
2.7.4	CSU sys>reader-macros.lisp.....	734
2.7.4.1	GET-DEFSTRUCT-CONSTRUCTOR-MACRO- INFO.....	734

2.7.4.2	SANDBOX-READER-MACRO	735
2.7.4.3	#	735
2.7.4.4	DEFSTRUCT-ALL-SLOTS	735
2.7.4.5	DEFSTRUCT-ACCESSOR-PREFIX.....	735
2.7.4.6	DEFSTRUCT-SLOT-VAL-PAIRS	736
2.7.4.7	SANDBOX-PRINTER.....	736
2.7.5	CSU sys>cl-tv-patches .lisp.....	736
2.7.5.1	OPFOR-TEMPORARY-CHOOSE-VARIABLE- VALUES-WINDOW	737
2.7.5.2	OPFOR-CHOOSE-VARIABLE-VALUES	737
2.7.5.3	WARP-MOUSE-TO-DONE-BOX.....	737
2.7.5.4	(METHOD OPFOR-TRIANGULATE-CONVEX- POLYGON GRAPHICS-MIXIN).....	738
2.7.5.5	OPFOR-MENU-CHOOSE.....	738
2.7.6	CSU sys>z1-tv-patches.lisp.....	738
2.7.6.1	MOUSE-DEFAULT-HANDLER	738
2.7.6.2	WHO-LINE-NO-WINDOW- DOCUMENTATION	739
2.7.6.3	OPFOR-CHOOSE-VARIABLE-VALUES- PROCESS-MESSAGE.....	739
2.7.7	CSU fonts>character-style-defs.lisp.....	739
2.7.7.1	*B&W-SCREEN*	739
2.7.8	CSU fonts>janus-logos.bfd	740
2.7.9	CSU fonts>military-icons.bfd.....	740
2.7.10	CSU ui>parameter-menus.lisp	740
2.7.10.1	*ROBO-COP-CONTROL*	740
2.7.10.2	*ROBO-COP-CONTROL*	740
2.7.10.3	ROBO-COP-CONTROL	741
2.7.11	CSU sys>interim-model.lisp	741
2.7.11.1	*OPFOR-FORMATIONS-PATH*	741
2.7.11.2	*BLUEFOR-FORMATIONS-PATH*	742
2.7.11.3	*OPFOR-ECHELONS-PATH*	742
2.7.11.4	*BLUEFOR-ECHELONS-PATH*	742
2.7.11.5	*OPFOR-CIS-PATH*	742
2.7.11.6	*BLUEFOR-CIS-PATH*	743
2.7.11.7	*MAPPINGS-PATH*	743
2.7.11.8	*OPFOR-FORMATIONS*	743
2.7.11.9	*BLUEFOR-FORMATIONS*	743

2.7.11.10	*OPFOR-ECHELONS*	744
2.7.11.11	*BLUEFOR-ECHELONS*	744
2.7.11.12	*MAPPINGS-ALIST*	744
2.7.11.13	*OPFOR-CIS-DATA*	745
2.7.11.14	*BLUEFOR-CIS-DATA*	745
2.7.11.15	*HOST-FOR-CONFIG-DATA*	745
2.7.11.16	READ-DATA-FILE	746
2.7.11.17	GET-FORMATION-DATA	746
2.7.11.18	*OPFOR-SYNONYMS*	748
2.7.11.19	*BLUEFOR-SYNONYMS*	748
2.7.11.20	GET-RIGHT-FORMATIONS	748
2.7.11.21	GET-RIGHT-ECHELONS	749
2.7.11.22	GET-RIGHT-CISS	749
2.7.11.23	FIND-FORMATIONS	750
2.7.11.24	GET-TYPES-FOR-ECHELON	750
2.7.11.25	GET-ECHELON-AND-TYPES	750
2.7.11.26	GET-VEHICLE-ECHELONS-AND-TYPES	751
2.7.11.27	CAR-EQL	751
2.7.11.28	REV-ASSOC	751
2.7.11.29	MAP-NUMBER-TO-ICON	752
2.7.11.30	MAP-NUMBER-TO-ECHELON	752
2.7.11.31	MAP-ECHELON-TO-NUMBER	752
2.7.11.32	MAP-ECHELON-TYPE-TO-NUMBER	753
2.7.11.33	MAP-ECHELON-TYPE-TO-ICON	753
2.7.11.34	GET-CIS-KEY	753
2.7.11.35	CISS-FOR-ECHELON	754
2.7.11.36	CISS-FOR-CONTROL-MEASURE	754
2.8	UTILITIES CSC	755
2.8.1	CSU sys>utilities.lisp	755
2.8.1.1	FV	755
2.8.1.2	DELETE-DISPLAYED-PRESENTATION	756
2.8.1.3	MENU-CHOOSE	756
2.8.1.4	'(FORMAT-COORDINATES SC WC)	757
2.8.1.5	FORMAT-COORDINATES	757
2.8.1.6	DRAW-STEALTH	758
2.8.1.7	M/SEC-TO-SPEED	758

	2.8.1.8	SPEED-TO-M/SEC	759
2.8.2	CSU sys>time.lisp.....	759	
	2.8.2.1	REL-ETIME-TO-SYMBOLICS-TIME.....	759
	2.8.2.2	SYMBOLICS-TIME-TO-BFLY-TIME.....	759
	2.8.2.3	REL-ETIME-TO-BFLY-TIME	760
	2.8.2.4	WALL-TIME-TO-REL-ETIME	760
	2.8.2.5	TIME-COMPARE.....	760
	2.8.2.6	MONTHS-ARRAY	760
	2.8.2.7	MILITARY-TIME-STRING-FROM-BFLY- NUMBER.....	761
	2.8.2.8	MILITARY-TIME-STRING-FROM- UNIVERSAL-TIME.....	761
	2.8.2.9	DATE-TIME-GROUP.....	761
2.8.3	CSU sys>dw-presentation-types.lisp	761	
	2.8.3.1	'(TYPE-OR-TOKEN TYPE-OR-NUL TYPE- OR-NO-CHANGE).....	762
	2.8.3.2	TYPE-OR-TOKEN	762
	2.8.3.3	TYPE-OR-NUL	763
	2.8.3.4	TYPE-OR-NO-CHANGE.....	763
2.9	COMPILATION AND INSTALLATION CSC	764	
2.9.1	CSU sys>site>saf.system	764	
2.9.2	CSU sys>site>saf.translations	764	
2.9.3	CSU sys>site>map.system.....	764	
2.9.4	CSU sys>site>map.translations.....	764	
2.9.5	CSU saf>sysdcl.lisp.....	765	
	2.9.5.1	NAME	765
	2.9.5.2	(FIND-PACKAGE 'DIRT)	766
	2.9.5.3	(FIND-PACKAGE 'MAP).....	766
	2.9.5.4	(FIND-PACKAGE 'SAF)	767
	2.9.5.5	*TERRAIN-INITIALIZATION-LIST*	767
	2.9.5.6	'MAKE-AREA	767
	2.9.5.7	*BACKGROUND-LISP-INTERACTOR- SCREEN-FRACTION*.....	767
	2.9.5.8	(OR (MEMBER EIGHT-BIT-COLOR *FEATURES*)).....	768
	2.9.5.9	SAF	768
	2.9.5.10	NETWORK-COMMS	768
	2.9.5.11	OBJECTS	768
	2.9.5.12	CONTROL.....	769

2.9.5.13	UI	769
2.9.5.14	SANDBOX	769
2.9.5.15	MODEL.....	769
2.9.5.16	BMI	770
2.9.6	CSU map>defsystem.lisp.....	770
2.9.6.1	(FIND-PACKAGE 'DIRT).....	770
2.9.6.2	(FIND-PACKAGE 'MAP).....	770
2.9.6.3	MAP	770
2.9.7	CSU saf>lispdm-init.lisp.....	771
APPENDIX A1:WATER AVOIDANCE ALGORITHM.....		A1-1
A1.1	SKIRTING	A1-1
A1.2	LOOKING FOR ENDS	A1-3
A1.3	RECURSION.....	A1-5
A1.4	RELAXATION.....	A1-6
A1.5	CLEARANCES	A1-8
APPENDIX A2: RUDP -- A RELIABLE UDP NETWORK PROTOCOL FOR SIMHOST/SYMBOLICS COMMUNICATIONS		A2-1
A2.1	THE NEED FOR RELIABLE COMMUNICATIONS	A2-1
A2.2	THE RUDP PROTOCOL IN OVERVIEW	A2-1
A2.3	THE PROTOCOL ALGORITHM.....	A2-1
A2.4	RUDP ON THE SYMBOLICS.....	A2-3
A2.5	RUDP ON THE SIMHOST	A2-4
APPENDIX A3: CROSS-REFERENCE GENERATOR.....		A3-1
APPENDIX B: INDEX OF DEFINITIONS		B-1
INDEX BY SECTION NUMBER		Index-1

1 INTRODUCTION: SAF WORKSTATION CSCI

1.1 Background

The Semi-Automated Forces (SAF) system provides a method of incorporating intelligent, realistic, participants that do not require a vehicle simulation. A Semi-Automated vehicle is virtually indistinguishable from a manned vehicle simulation to all observers on the network. The SAF system provides command and control for up to a battalion of Semi-Automated vehicles.

Since the detailed simulation of many realistic vehicles is a computation-intensive task, the SAF system is typically partitioned across several processing platforms. One platform provides the user interface and another the vehicle simulation. This division is reflected in the SAF CSCI structure.

The SAF Workstation CSCI provides the user interface by which the SAF operator controls and monitors SAF. The Workstation CSCI contains code to transmit orders to and receive reports from the SAF Simhost CSCI which performs the simulation of the SAF vehicles and units. The SAF Workstation CSCI is also capable of saving and restoring exercises.

1.2 External Interfaces

To execute a user request and to continue to update the user display the SAF Workstation must communicate to the SAF Parameter Editor and the SAF Simulation Host (Simhost). The Parameter Editor is used to modify the default settings for vehicle behavior, weapons effectiveness, and vehicle interactions. The communication to the Parameter Editor is at the request of the Workstation user. The Simhost provides the detailed vehicle simulation for each of the entities under the command of the Workstation user. The Simhost also provides the interface to the SIMNET network. Since the Simhost maintains the state of the vehicles in the exercise, it continuously updates the Workstation with information to update the display.

The SAF Workstation CSCI interfaces with the SAF Simulation Host (Simhost) CSCI via the SAF Command Protocol. This protocol is described in an appendix to the SAF Parameter Editor CSCI software design document.

The SAF Workstation CSCI interfaces with the SAF Parameter Editor CSCI via the SAF parameter files. These files are described in an appendix to the SAF Parameter Editor CSCI software design document.

Figure 1.2-1 depicts the interfaces between the SAF system components.

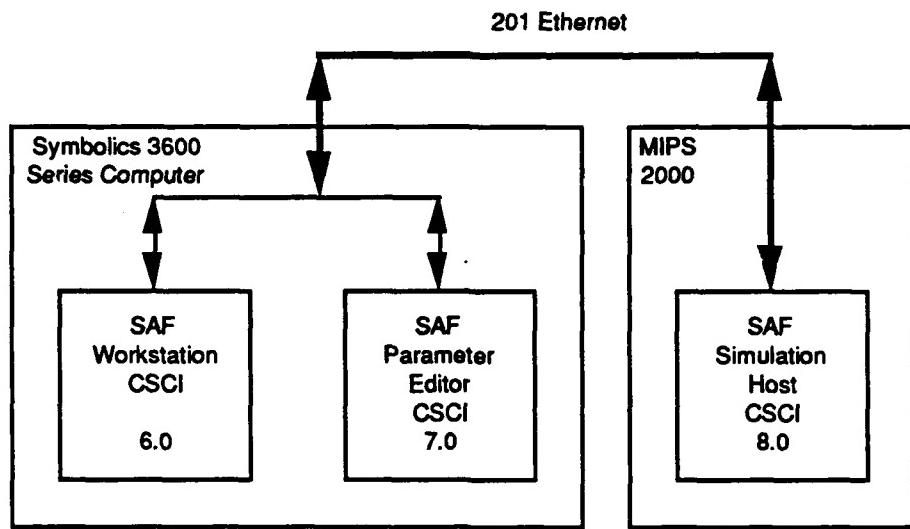


Figure 1.2-1: Software Interface Organization

1.3 Internal Structure

The SAF station operator is given battlefield information by means of two monitors. A high resolution color monitor provides a plan view map display of the battlefield showing the battlefield terrain and the state of the units out on the battlefield. This is called the Plan View Display, abbreviated PVD. It also shows the graphical control measures which control the behavior of own units (units controlled by the workstation) and fire activity out on the battlefield. A monochrome monitor provides two different displays corresponding to the two major modes of use of the workstation: battlemaster mode and commander mode.

In battlemaster mode, the monochrome monitor provides commands for selecting, placing, and creating vehicles out on the battlefield while the plan view map display provides a way to position the units. The monochrome monitor also allows some of the global characteristics of the exercise to be set, such as commander's view or omniscient view. Under commander's view, the map display only shows the enemy vehicles which the own vehicles can see. Under omniscient view, the map display shows where everyone is.

In commanders mode, the monochrome monitor displays the task organization of the own units, a message log, and a menu for setting the unit command mode of the workstation. The different command modes allow the SAF operator to either prepare a graphical operations order, issue the operations orders and fragmentary orders to selected units, issue TAC/Es (short immediate fragmentary orders) to units, and request status reports from the units.

The SAF Workstation CSCI is composed of the Computer Software Components (CSCs) depicted in Figure 1.3-1.

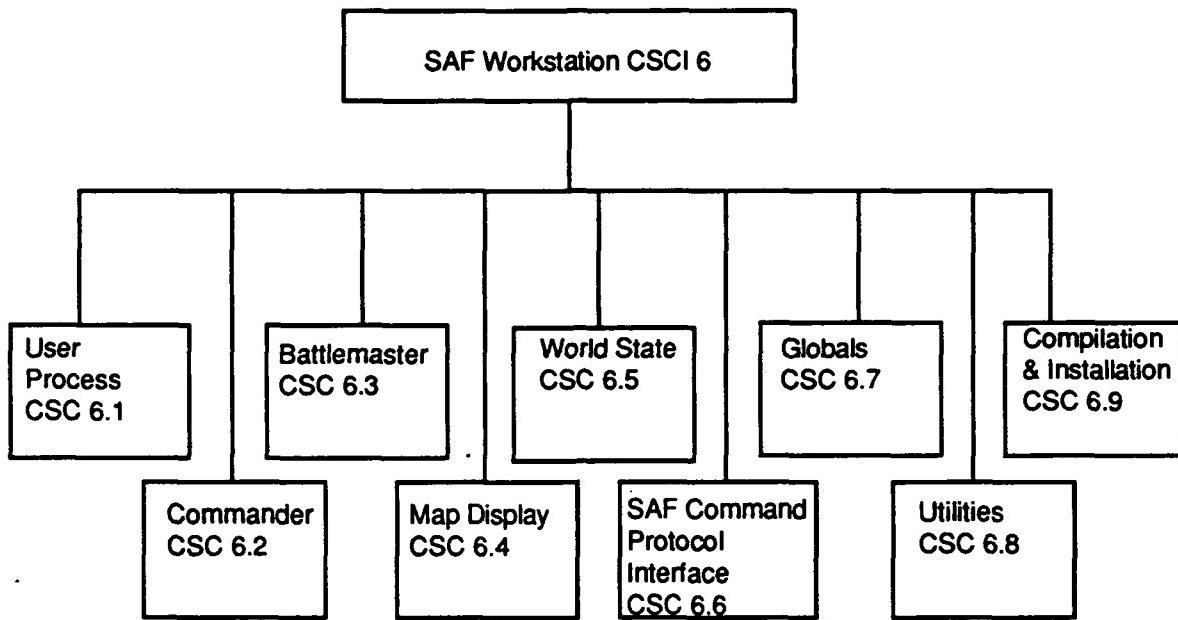


Figure 1.3-1 CSCs of the SAF Workstation CSCI

1.4 Configuration and Configuration Management

The SAF Workstation CSCI runs on the SAF Workstation HWCI, which is currently a Symbolics 3650 Imagestation, executing under the Genera 7.0 operating system. The SAF Workstation CSCI is written in Symbolics Common Lisp plus the Flavors object-oriented programming system which is included in Genera. A custom enhancement of Flavors, called Objects, is defined and used to automate certain Flavor operations. The Objects system is described in CSU objects>defobject.lisp. A few operating system patches are written in Zeta Lisp; see CSU sys>zl-tv-patches.lisp.

1.5 Terminology and Documentation

1.5.1 Glossary

ADA	Air Defense Artillery
AI	Artificial Intelligence
alu	Arithmetic Logic Unit (on Symbolics machine)
BMI	SAF Battlemaster Interface
CIS	SAF Combat Instruction Set
CP	Lisp Command Processor
CSC	Computer Software Component
CSCI	Computer Software Configuration Item
CSU	Computer Software Unit
CVV	Symbolics Choose Variable Values utility

EGC	Symbolics Ephemeral Garbage Collector
FWA	Fixed Wing Aircraft
HWC1	Hardware Configuration. Item
IFV	Infantry Fighting Vehicle
IP/TCP	Internet Protocol/Transmission Control Protocol
IP/UDP	Internet Protocol/Universal Datagram Protocol
IVIS	SAF Inter-Vehicular Information System
Lisp	List Processing
MIPS	A particular Simhost hardware platform
OPFOR	SAF Opposing Forces
OPORD	SAF Operational Order
PVD	SAF Plan View Display
RUDP	Reliable Universal Datagram Protocol
RWA	Rotary Wing Aircraft
SAF	Semi-Automated Forces
SIMHOST	SIMNET Simulation Host
TAC/E	Tactical/Emergency
TCP/IP	Transmission Control Protocol/Internet Protocol
UDP	Universal Datagram Protocol
UTM	Universal Transverse Mercator Coordinate System

1.5.2 Related Documentation

Symbolics Genera 7.0 manuals, Symbolics, July 1986

Common Lisp, the Language, 2nd Edition, Guy L. Steele Jr., Digital Press, 1990

Datums, Ellipsoids, Grids, and Grid Reference Systems, Defense Mapping Agency document DMA TM 8358.1

Operational Terms and Symbols, Field Manual FM 101-5-1, US Department of the Army, 21 October 1985

Terrain Reasoning in the Simnet Semi-Automated Forces System, Thomas Stanzione, BBN Systems and Technologies Corporation, Report No. 7140, October 1989

Artificial Intelligence, 2nd Edition, Patrick Henry Winston, Addison Wesley 1984

Object-Oriented Programming in Common Lisp, Sonya E. Keene, Addison Wesley 1989

1.6 Miscellaneous

1.6.1 Automatically Generated Definition Cross-Reference

SAF Documentation includes an automatically-generated cross reference of definitions. Each cross-reference entry is included as a numbered section in the CSU that contains it. Each entry includes the name of the defined object, the path name of the file where it is defined, its type, arguments, calls, callers, and description. A sample entry is shown below:

2.1.1.3 MAKE-OPFOR-SUB-PROCESS-FUNCTION

Type:	>saf>ui>processes.lisp
Arguments:	Function (NAME BODY-FUNCTION)
Outputs:	
Calls:	MAKE-OPFOR-SUB-PROCESS-FUNCTION-1 >saf>ui>processes.lisp (METHOD MAKE-INSTANCE OPFOR-SUB- PROCESS AFTER) >saf>ui>processes.lisp
Called by:	
Description:	None

The first entry is the name of the defined object, on the same line as the section heading number. On the next line is the path name of the file containing the definition.

The Type entry indicates whether the object is a function, method, parameter, variable, flavor, presentation type, etc.

The Arguments entry lists the arguments of the object if it is a function or method.

The Outputs entry is currently left blank, since there is no generally accepted definition of the output of a Lisp object.

The Calls entry is a list of the definitions called by the object. A parameter or variable is considered to be called if it is referred to or used by the lisp forms of the object being described. Each call is followed by the pathname of the file in which the called object is defined.

The Called By entry is a similar list of the objects which call the object being described; the pathname of the calling object's file is also included.

The Description entry contains the contents of the description string in the lisp object, of it has one. Since most objects were not given description strings when the code was written, most of these entries are "None".

It is important to realize that this cross-reference does not expand each definition to see if it contains other definitions. This means that only top-level Lisp forms are listed. As a result, important forms may be absent from the cross reference. For example, a defflavor form may appear inside an eval-when form, for compilation purposes, as follows:

```
(eval-when (compile load eval)
  (defflavor object-x ... ))
```

In this case, the flavor object-x will not appear in the cross-reference, either as a main entry, or a caller. However, if it is referred to by a main entry, it may appear as a callee. The cross reference will list this entry as a definition of the Lisp form (COMPILE LOAD EVAL), of type EVAL-WHEN, with a nil argument list.

The cross-referencing program was not designed to be complete; it was intended as a basic tool that would provide some useful information. The source code for the program is included in Appendix A3, Cross-Reference Generator.

The Index of Definitions was generated by the same Lisp program that constructed the cross reference. As a result, functions that do not appear in the cross reference will also be missing from the index. The index of definitions is found in Appendix B.

1.6.2 Auxiliary Functions

A number of lisp forms used in SAF code define auxiliary functions when called. This feature, an example of the self-modifying capability of lisp, can be confusing because an auxiliary function does not have a form which obviously defines it. For example, the Common Lisp macro *defstruct* automatically creates a constructor function. If a structure has the name *thing*, the constructor function will be given the name *make-thing* by default. However, there will be no lexically apparent definition of *make-thing*, that could be located, for example, by a text search.

The following is a list of all those forms used in the SAF code which create auxiliary functions:

```
def-packet-handler
defflavor (Symbolics)
define-array-accessors
define-model-menu-command
define-program-framework (Symbolics)
defobject
defsend
defstorage (lmfs:defstorage) (Symbolics)
defstruct (Common Lisp)
```

Those forms that are part of the Symbolics software are documented in the Symbolics manuals, with the exception of lmfs:defstorage, which is discussed in the CSU network>defstorage.lisp. The others are part of the SAF software. In most cases, the source code for the form makes it clear what the names of the auxiliary functions will look like.

For example, the macro def-packet-handler, defined in rudp>handle-incoming.lisp, uses the backquote-comma macro syntax to create the function names PRINT-XXX-PKT and PROCESS-XXX-PKT, where XXX is the print-name of the packet-type argument.

1.6.3 Commented-Out Code

Most files in the SAF system contain blocks of lisp code that have been commented out, either with semicolons, or by placing the reader syntax command `#+ignore` in front of the form to be suppressed. In most cases, such code is truly obsolete and should be deleted. This is especially true if the removal is dated several months back.

In some cases, however, the code has a useful function that is not currently needed; this is usually indicated by comments, or explained in this documentation.

In other cases, commented code contains important information on how actual "live" code was constructed. For example, a code fragment obtained from an expert may be included, as a reference, near the form it was used to design. Such situations are usually clear from context; the text should be retained.

2 CSCI FUNCTIONS AND INTERFACES

2.1 User Process CSC

The User Process CSC contains the code which is run by the user process. This process receives and executes the user's mouse and keyboard commands. An additional process, the mouse warp process, is used to transport the mouse cursor between the color and the monochrome monitor whenever it gets to the left or right edge of the screen. The majority of the commands which the user can issue are invoked by clicking on a mouse sensitive item on either the color or the monochrome monitor. These commands are discussed in the context of the windows and panes in which the mouse sensitive items are displayed. The code in this section also defines the frame for the color and the monochrome display windows and the top level loop which the user process runs to accept user input. Any terrain redisplay commands which the user process receives are queued on the update process which executes them. Any commands which generate messages to the simhost are queued on the RUDP process which transmits them to the Simhost. The SAF workstation has two basic operating modes, the battlemaster mode for initializing the SAF system and the commander mode which controls the forces which the battlemaster has set up. The window displayed on the monochrome monitor is different for the two modes and contains different commands. The User Process CSC contains the following CSUs.

```
ui>processes.lisp csu
ui>menus.lisp csu
ui>mouse-interface.lisp csu
ui>frame.lisp csu
ui>commands.lisp csu
```

2.1.1 CSU ui>processes.lisp

This unit contains the top-level functions for the background processes used in the SAF system. SAF is composed of several processes. The user process is created automatically with the SAF program-framework. This unit defines two background processes: First, the RUDP process, *process-rudp-packets*, which handles communication with the Simhost machine. This task has to have its own subprocess because information requiring immediate attention can arrive over the network at any time, even while the user process is busy. Second, the Update process, *update-top-level*, which handles the redisplay of objects on the PVD. This task was given its own subprocess because screen-painting can be time-consuming, and would lock up the user interface until done, if it was part of the user process. By making update a background process, the user interface stays responsive, even during long screen updates.

This CSU also defines several utilities for handling processes, and a flavor used to represent SAF sub-processes. Processes are described in detail in the Symbolics manuals.

Note: There is another process used by SAF, the mouse-process, but it is a temporary process, created when needed to perform a single mouse-warp action. See CSU ui>mouse-interface.lisp, section 2.1.3.

2.1.1.1 DYING-PROCESS

Definition 1

Type: >saf>ui>processes.lisp
Arguments: Function
(PROCESS)
Outputs:
Calls: NAME
>saf>sysdcl.lisp
OPFOR-IO
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
Called by: MAKE-OPFOR-SUB-PROCESS-FUNCTION-1
>saf>ui>processes.lisp
Description: None

2.1.1.2 MAKE-OPFOR-SUB-PROCESS-FUNCTION-1

Definition 2

Type: >saf>ui>processes.lisp
Arguments: Macro
(FUNCTION-NAME BODY)
Outputs:
Calls: *OPFOR-FRAME*
>saf>sys>vars.lisp
DYING-PROCESS
>saf>ui>processes.lisp
MAKE-OPFOR-SUB-PROCESS-FUNCTION-1
>saf>ui>processes.lisp
MAKE-OPFOR-SUB-PROCESS-FUNCTION
>saf>ui>processes.lisp
MAKE-OPFOR-SUB-PROCESS-FUNCTION-1
>saf>ui>processes.lisp
Description: None

2.1.1.3 MAKE-OPFOR-SUB-PROCESS-FUNCTION

Definition 3

Type: >saf>ui>processes.lisp
Arguments: Function
(NAME BODY-FUNCTION)
Outputs:
Calls: MAKE-OPFOR-SUB-PROCESS-FUNCTION-1
>saf>ui>processes.lisp
Called by: (METHOD MAKE-INSTANCE OPFOR-SUB-PROCESS AFTER)
>saf>ui>processes.lisp
Description: None

2.1.1.4 COM-CHECK-OPFOR-PROCESSES

Definition 4

Type:	>saf>ui>processes.lisp
Arguments:	CP Command
Outputs:	()
Calls:	OPFOR-SUB-PROCESS-REPORTS
Called by:	>saf>ui>processes.lisp
Description:	None
	None

2.1.1.5 COM-SAF-CHECK-OPFOR-PROCESSES

Definition 5

Type:	>saf>ui>processes.lisp
Arguments:	CP Command
Outputs:	()
Calls:	OPFOR-SUB-PROCESS-REPORTS
Called by:	>saf>ui>processes.lisp
Description:	None
	None

2.1.1.6 OPFOR-SUB-PROCESS-REPORTS

Definition 6

Type:	>saf>ui>processes.lisp
Arguments:	Function
Outputs:	()
Calls:	*OPFOR-FRAME*
Called by:	>saf>sys>vars.lisp
	COM-SAF-CHECK-OPFOR-PROCESSES
	>saf>ui>processes.lisp
	COM-CHECK-OPFOR-PROCESSES
Description:	>saf>ui>processes.lisp
	None

2.1.1.7 SECONDS-AGO

Definition 7

Type:	>saf>ui>processes.lisp
Arguments:	Subst
Outputs:	(UNIVERSAL-TIME)
Calls:	None
Called by:	(METHOD REPORT OPFOR-SUB-PROCESS)
Description:	>saf>ui>processes.lisp
	None

2.1.1.8 OPFOR-SUB-PROCESS

Definition 8

Type:	>saf>ui>processes.lisp
Arguments:	Flavor
Outputs:	()
Calls:	None
Called by:	None
Description:	None

2.1.1.9 '(OPFOR-SUB-PROCESS PROCESS)

Definition 9

Type:	>saf>ui>processes.lisp
Arguments:	EXPORT
Outputs:	()
Calls:	None
Called by:	None
Description:	None

2.1.1.10 *ALL-OPFOR-SUB-PROCESSES*

Definition 10

Type:	>saf>ui>processes.lisp
Arguments:	Variable
Outputs:	()
Calls:	None
Called by:	(METHOD REMEMBER OPFOR-SUB-PROCESS) >saf>ui>processes.lisp (METHOD MURDER OPFOR-SUB-PROCESS) >saf>ui>processes.lisp (METHOD MAKE-INSTANCE OPFOR-SUB-PROCESS AFTER) >saf>ui>processes.lisp
Description:	bookkeeping of sub-processes

2.1.1.11 (METHOD MAKE-INSTANCE OPFOR-SUB-PROCESS AFTER)

Definition 11

Type:	>saf>ui>processes.lisp
Arguments:	Method
Outputs:	(&REST IGNORE)
Calls:	MAKE-OPFOR-SUB-PROCESS-FUNCTION >saf>ui>processes.lisp *ALL-OPFOR-SUB-PROCESSES*
Called by:	>saf>ui>processes.lisp
Description:	None

2.1.1.12 (METHOD DISABLE OPFOR-SUB-PROCESS)

Definition 12

Type: >saf>ui>processes.lisp
Arguments: Method
Outputs: ()
Calls: None
Called by: None
Description: None

2.1.1.13 (METHOD ENABLE OPFOR-SUB-PROCESS)

Definition 13

Type: >saf>ui>processes.lisp
Arguments: Method
Outputs: ()
Calls: None
Called by: None
Description: None

2.1.1.14 (METHOD MURDER OPFOR-SUB-PROCESS)

Definition 14

Type: >saf>ui>processes.lisp
Arguments: Method
Outputs: ()
Calls: *ALL-OPFOR-SUB-PROCESSES*
Called by: >saf>ui>processes.lisp
Description: None

2.1.1.15 (METHOD REMEMBER OPFOR-SUB-PROCESS)

Definition 15

Type: >saf>ui>processes.lisp
Arguments: Method
Outputs: ()
Calls: *ALL-OPFOR-SUB-PROCESSES*
Called by: >saf>ui>processes.lisp
Description: None

2.1.1.16 (METHOD REPORT OPFOR-SUB-PROCESS)

Definition 16

Type:	>saf>ui>processes.lisp
Arguments:	Method
Outputs:	()
Calls:	*OPFOR-IO*
	>saf>sys>vars.lisp
	SAY
	>saf>sys>macros.lisp
	SECONDS-AGO
	>saf>ui>processes.lisp
Called by:	None
Description:	None

2.1.1.17 *RUDP-PROCESS-LAST-CYCLE*

Definition 17

Type:	>saf>ui>processes.lisp
Arguments:	Parameter
Outputs:	()
Calls:	None
Called by:	PROCESS-RUDP-PACKETS
	>saf>ui>processes.lisp
	(METHOD MAKE-INSTANCE SAF AFTER)
	>saf>ui>frame.lisp
	MAKE-RUDP-PROCESS
	>saf>ui>processes.lisp
Description:	None

2.1.1.18 NETWORK-PROCESS-WAKE-UP

Definition 18

Type:	>saf>ui>processes.lisp
Arguments:	Function
Outputs:	()
Calls:	RETRANSMIT_PERIOD
	>saf>network>vars.lisp
	SIM-CONN
	>saf>rudp>vars.lisp
	RETRANSMIT-TIMER
	>saf>rudp>vars.lisp
	PACKET-REQUEST-QUEUE
	>saf>rudp>vars.lisp
	PACKET-IMMEDIATE-QUEUE
	>saf>rudp>vars.lisp
	STANDALONEP
	>saf>network>connection.lisp

Called by: PROCESS-RUDP-PACKETS
 >saf>ui>processes.lisp
 Description: decides when to make the update process runnable

2.1.1.19 PROCESS-RUDP-PACKETS

Definition 19

Type: >saf>ui>processes.lisp
 Arguments: Function
 Outputs: ()
 Calls: *RADIO-OUTPUT*
 >saf>sys>vars.lisp
 STANDALONEP
 >saf>network>connection.lisp
 RUDP-TRANSMIT-AND-RECEIVE
 >saf>rudp>utils.lisp
 RUDP-PROCESS-LAST-CYCLE
 >saf>ui>processes.lisp
 NETWORK-PROCESS-WAKE-UP
 >saf>ui>processes.lisp
 Called by: (METHOD MAKE-INSTANCE SAF AFTER)
 >saf>ui>frame.lisp
 MAKE-RUDP-PROCESS
 >saf>ui>processes.lisp
 Description: None

2.1.1.20 MAKE-RUDP-PROCESS

Definition 20

Type: >saf>ui>processes.lisp
 Arguments: Subst
 Outputs: ()
 Calls: *RUDP-PROCESS-LAST-CYCLE*
 >saf>ui>processes.lisp
 PROCESS-RUDP-PACKETS
 >saf>ui>processes.lisp
 Called by: (METHOD MAKE-INSTANCE SAF AFTER)
 >saf>ui>frame.lisp
 Description: None

2.1.1.21 MAKE-UPDATE-PROCESS

Definition 21

Type: >saf>ui>processes.lisp
 Arguments: Subst
 Outputs: ()

Calls: *UPDATE-PROCESS-LAST-CYCLE*
>saf>sys>update-process.lisp
UPDATE-TOP-LEVEL
>saf>sys>update-process.lisp
Called by: (METHOD MAKE-INSTANCE SAF AFTER)
>saf>ui>frame.lisp
Description: None

2.1.2 CSU ui>menus.lisp

This unit contains functions that implement some static menus. These include the "Types of Terrain to Draw" menu, and the Zoom menu. The methods MULTIPLE-CHOICE-ALL-SHOW and MULTIPLE-CHOICE-ALL-HIDE are modifications of the Symbolics method MULTIPLE-CHOICE-DONE of the flavor MULTIPLE-CHOICE-MIXIN. Because these methods directly modify system variables in the tv package, such as choice-box-state, they may not be portable to new Genera versions. The items in the Zoom menu include documentation strings, signaled by the keyword :documentation.

2.1.2.1 (METHOD MULTIPLE-CHOICE-ALL-SHOW MULTIPLE-CHOICE-MIXIN)

Definition 1

>saf>ui>menus.lisp
Type: Method
Arguments: (CHOSEN THING Y)
Outputs:
Calls: None
Called by: None
Description: None

2.1.2.2 (METHOD MULTIPLE-CHOICE-ALL-HIDE MULTIPLE-CHOICE-MIXIN)

Definition 2

>saf>ui>menus.lisp
Type: Method
Arguments: (CHOSEN THING Y)
Outputs:
Calls: None
Called by: None
Description: None

2.1.2.3 *TERRAIN-MENU*

Definition 3

>saf>ui>menus.lisp
Type: Variable
Arguments: ()
Outputs:

Calls: None
Called by: HANDLE-TERRAIN-MENU
 >saf>ui>menus.lisp
 MAYBE-MAKE-TERRAIN-MENU
 >saf>ui>menus.lisp
Description: None

2.1.2.4 MAYBE-MAKE-TERRAIN-MENU

Definition 4

>saf>ui>menus.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *NEW-INTERFACE-FLG*
 >saf>ui>mouse-interface.lisp
 TERRAIN-MENU
 >saf>ui>menus.lisp
 NEW-INTERFACE-FLG
 >saf>ui>mouse-interface.lisp
Called by: HANDLE-TERRAIN-MENU
 >saf>ui>menus.lisp
Description: None

2.1.2.5 HANDLE-TERRAIN-MENU

Definition 5

>saf>ui>menus.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *TERRAIN-OPTIONS*
 >saf>sys>vars.lisp
 INTERFACE-TO-UPDATE-PROCESS-QUEUE
 >saf>sys>vars.lisp
 ADD-TO-UPDATE-QUEUE
 >saf>sys>macros.lisp
 TERRAIN-MENU
 >saf>ui>menus.lisp
 MAYBE-MAKE-TERRAIN-MENU
 >saf>ui>menus.lisp
Called by: (METHOD COM-TERRAIN-OPTIONS-INTERNAL PVD)
 No Source File Record
Description: None

2.1.3 CSU ui>mouse-interface.lisp

This unit contains routines to allow the mouse to be driven between the monochrome display and the color display by the user. This "mouse-warp" capability has actually been written into a modified version of the main Symbolics mouse process. (See the file

sys>zl-tv-patches.lisp, section 2.7.6.) This was done to insure that the mouse warp continues to work even when the SAF user is not running SAF. For example, if a SAF user hit Select-L to run some Lisp forms , the mouse warp would still work in Lisp Listener mode. The main loop of the modified mouse process calls the function *consider-flipping*, defined in this unit. If a decision is made to warp the mouse, a separate process is temporarily created which does this, and then terminates. This separate process is necessary because it is illegal to warp the mouse from the mouse process itself; doing so can cause the mouse pointer to disappear.

The function *consider-flipping* calls the function *execute-in-new-interface*, passing it a "jump-to" form that will warp the mouse when evaluated. Then, *execute-in-new-interface* uses the Symbolics function *process-run-function* to start a new process. The new process just calls *new-interface-process-function*, a simple routine that just evaluates any forms on the queue *nip-forms*. Since *execute-in-new-interface* pushes the "jump-to" form onto *nip-forms*, the "jump-to" form will eventually get evaluated by *new-interface-process-function*, warping the mouse.

2.1.3.1 (*NEW-INTERFACE-FLG* CONSIDER-FLIPPING)

Definition 1

>saf>ui>mouse-interface.lisp
 Type: EXPORT
 Arguments: ()
 Outputs:
 Calls: None
 Called by: None
 Description: None

2.1.3.2 *NEW-INTERFACE-FLG*

Definition 2

>saf>ui>mouse-interface.lisp
 Type: Parameter
 Arguments: ()
 Outputs:
 Calls: None
 Called by: COLOR-SCREEN-MENU
 >saf>ui>mouse-interface.lisp
 MAYBE-MAKE-TERRAIN-MENU
 >saf>ui>menus.lisp
 MOUSE-DEFAULT-HANDLER
 >saf>sys>zl-tv-patches.lisp
 Description: None

2.1.3.3 MOUSE-FLIP-SCREEN

Definition 3

>saf>ui>mouse-interface.lisp
 Type: Function
 Arguments: (CHAR PANE)
 Outputs:

Calls: JUMP-TO-B&W-SCREEN
>saf>ui>mouse-interface.lisp
JUMP-TO-COLOR-SCREEN
>saf>ui>mouse-interface.lisp
Called by: (METHOD TOP-LEVEL CONFIGURATION-MENU)
>saf>interface>formations.lisp
(METHOD TOP-LEVEL OBJECT-MENU)
>saf>interface>object-menu.lisp
(METHOD TOP-LEVEL MODEL-MENU)
>saf>interface>model-menu.lisp
(METHOD TOP-LEVEL SAF)
>saf>ui>frame.lisp
Description: None

2.1.3.4 FIND-.MOUSE

Definition 4

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: (CHAR PANE)
Outputs:
Calls: None
Called by: (METHOD TOP-LEVEL CONFIGURATION-MENU)
>saf>interface>formations.lisp
(METHOD TOP-LEVEL OBJECT-MENU)
>saf>interface>object-menu.lisp
(METHOD TOP-LEVEL MODEL-MENU)
>saf>interface>model-menu.lisp
(METHOD TOP-LEVEL SAF)
>saf>ui>frame.lisp
Description: None

2.1.3.5 CONSIDER-FLIPPING

Definition 5

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: (SCREEN MOUSE-X-COORD)
Outputs:
Calls: JUMP-TO-B&W-SCREEN
>saf>ui>mouse-interface.lisp
JUMP-TO-COLOR-SCREEN
>saf>ui>mouse-interface.lisp
EXECUTE-IN-NEW-INTERFACE
>saf>ui>mouse-interface.lisp
Called by: MOUSE-DEFAULT-HANDLER
>saf>sys>zl-tv-patches.lisp
Description: None

2.1.3.6 JUMP-TO-B&W-SCREEN

Definition 6

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: (X-WC)
Outputs:
Calls: None
Called by: MOUSE-FLIP-SCREEN
 >saf>ui>mouse-interface.lisp
 CONSIDER-FLIPPING
 >saf>ui>mouse-interface.lisp
Description: None

2.1.3.7 JUMP-TO-COLOR-SCREEN

Definition 7

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: (X-WC)
Outputs:
Calls: None
Called by: MOUSE-FLIP-SCREEN
 >saf>ui>mouse-interface.lisp
 CONSIDER-FLIPPING
 >saf>ui>mouse-interface.lisp
Description: None

2.1.3.8 *COLOR-SCREEN-MENU*

Definition 8

>saf>ui>mouse-interface.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: COLOR-SCREEN-MENU
 >saf>ui>mouse-interface.lisp
Description: None

2.1.3.9 COLOR-SCREEN-MENU

Definition 9

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: ()
Outputs:

Calls: *NEW-INTERFACE-FLG*
>saf>ui>mouse-interface.lisp
NEW-INTERFACE-FLG
>saf>ui>mouse-interface.lisp
COLOR-SCREEN-MENU
>saf>ui>mouse-interface.lisp
CLEAR-UNITS
>saf>ui>mouse-interface.lisp
CLEAR-UNITS-AND-OVERLAYS
>saf>ui>mouse-interface.lisp
WORKSTATION-BATTLE-VIEW
>saf>bmi>bmi-frame.lisp

Called by: (PRESENTATION-MOUSE-HANDLER PVD-COMMAND-MENU)

No Source File Record

Description: Pops up basic plan view display menu

2.1.3.10 CLEAR-UNITS

Definition 10

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *DB-INSTANCES*
>saf>sys>vars.lisp
Called by: CLEAR-UNITS-AND-OVERLAYS
>saf>ui>mouse-interface.lisp
COLOR-SCREEN-MENU
>saf>ui>mouse-interface.lisp
Description: None

2.1.3.11 CLEAR-UNITS-AND-OVERLAYS

Definition 11

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: ()
Outputs:
Calls: CLEAR-UNITS
>saf>ui>mouse-interface.lisp
CLEAR-OVERLAYS
>saf>ui>mouse-interface.lisp
Called by: COLOR-SCREEN-MENU
>saf>ui>mouse-interface.lisp
Description: None

2.1.3.12 CLEAR-OVERLAYS

Definition 12

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *ALL-OVERLAYS*
>saf>sys>vars.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
UNIT
>saf>cm>control-measure.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp
Called by: CLEAR-UNITS-AND-OVERLAYS
>saf>ui>mouse-interface.lisp
Description: None

2.1.3.13 *NEW-INTERFACE-PROCESS*

Definition 13

>saf>ui>mouse-interface.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: EXECUTE-IN-NEW-INTERFACE
>saf>ui>mouse-interface.lisp
Description: None

2.1.3.14 *NIP-FORMS*

Definition 14

>saf>ui>mouse-interface.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: NEW-INTERFACE-PROCESS-FUNCTION
>saf>ui>mouse-interface.lisp
PUSH-NIP-FORM-IF-NECESSARY
>saf>ui>mouse-interface.lisp
Description: None

2.1.3.15 PUSH-NIP-FORM-IF-NECESSARY

Definition 15

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: (FORM)
Outputs:
Calls: *NIP-FORMS*
>saf>ui>mouse-interface.lisp
Called by: EXECUTE-IN-NEW-INTERFACE
>saf>ui>mouse-interface.lisp
Description: None

2.1.3.16 EXECUTE-IN-NEW-INTERFACE

Definition 16

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: (FORM)
Outputs:
Calls: NAME
>saf>sysdcl.lisp
NEW-INTERFACE-PROCESS
>saf>ui>mouse-interface.lisp
PUSH-NIP-FORM-IF-NECESSARY
>saf>ui>mouse-interface.lisp
NEW-INTERFACE-PROCESS-FUNCTION
>saf>ui>mouse-interface.lisp
Called by: CONSIDER-FLIPPING
>saf>ui>mouse-interface.lisp
Description: None

2.1.3.17 NEW-INTERFACE-PROCESS-FUNCTION

Definition 17

>saf>ui>mouse-interface.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *NIP-FORMS*
>saf>ui>mouse-interface.lisp
Called by: EXECUTE-IN-NEW-INTERFACE
>saf>ui>mouse-interface.lisp
Description: None

2.1.4 CSU ui>frame.lisp

This unit contains the definition of the color and monochrome display windows and the top-level loop to accept user input, including the actual entry point to the SAF code.

These definitions are a straightforward application of the utilities found in the Symbolics dynamic windows package dw:, such as dw:Define-Program-Framework. This function provides a general, high-level mechanism for user interfaces on the Symbolics machine. The method *top-level* of the program-framework SAF, defined towards the end of the file, is the main entry point to SAF. This is the code that gets executed when the user types Select-O.

Note: This unit makes use of "whoppers", powerful method-overloading constructs that are part of the Symbolics flavors system.

The commented-out forms beginning with "(defun set-color-who-line" have the effect of allowing the lisp world to be saved after the color screen is created. They work fine, but were commented out because they were not needed.

The function *Do-Nothing-Command-Loop* is used because it is faster than a null method call. The *pwd* program framework doesn't need a top-level method because it is controlled by the *saf* program framework's top-level method.

The form (*compile-flavor-methods pwd*) precompiles the *pwd* program framework, for speed.

2.1.4.1 STANDARD-MARGINS

Definition 1

>saf>ui>frame.lisp

Type: Function

Arguments: (LABEL)

Outputs:

Calls: None

Called by: CONFIGURATION-MENU PROGRAM-FRAME-OPTIONS

>saf>patch>saf-6>saf-6-7.lisp

OBJECT-MENU PROGRAM-FRAME-OPTIONS

>saf>patch>saf-6>saf-6-6.lisp

MODEL-MENU PROGRAM-FRAME-OPTIONS

>saf>patch>saf-6>saf-6-5.lisp

SAF PROGRAM-FRAME-OPTIONS

>saf>ui>frame.lisp

Description: None

2.1.4.2 PVD

Definition 2

>saf>ui>frame.lisp

Type: DEFINE-PROGRAM-FRAMEWORK

Arguments: ()

Outputs:

Calls: None

Called by: SAF

>saf>ui>frame.lisp

LEFT-ON- TERRAIN OPTIONS -AT-PVD-PVD-MENU-COMMAND

>saf>ui>commands.lisp

(METHOD COM-TERRAIN-OPTIONS-INTERNAL PVD)

No Source File Record
LEFT-ON- REFRESH -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-REFRESH-INTERNAL PVD)
No Source File Record
LEFT-ON- MAP SCALE -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-RESCALE-INTERNAL PVD)
No Source File Record
LEFT-ON- ZOOM OUT -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-ZOOM-OUT-INTERNAL PVD)
No Source File Record
LEFT-ON- PAN -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-PAN-INTERNAL PVD)
No Source File Record
LEFT-ON- ZOOM IN -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-ZOOM-IN-INTERNAL PVD)
No Source File Record
DEFINE-PVD-MENU-COMMAND
>saf>ui>commands.lisp
MAKE-PVD-FRAME
>saf>ui>frame.lisp
DEFINE-PVD-COMMAND
>saf>ui>frame.lisp

Description: None

2.1.4.3 PVD

Definition 3

>saf>ui>frame.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: SAF
>saf>ui>frame.lisp
LEFT-ON- TERRAIN OPTIONS -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-TERRAIN-OPTIONS-INTERNAL PVD)
No Source File Record
LEFT-ON- REFRESH -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-REFRESH-INTERNAL PVD)
No Source File Record
LEFT-ON- MAP SCALE -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-RESCALE-INTERNAL PVD)
No Source File Record
LEFT-ON- ZOOM OUT -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp

(METHOD COM-ZOOM-OUT-INTERNAL PVD)
No Source File Record
LEFT-ON- PAN -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-PAN-INTERNAL PVD)
No Source File Record
LEFT-ON- ZOOM IN -AT-PVD-PVD-MENU-COMMAND
>saf>ui>commands.lisp
(METHOD COM-ZOOM-IN-INTERNAL PVD)
No Source File Record
DEFINE-PVD-MENU-COMMAND
>saf>ui>commands.lisp
MAKE-PVD-FRAME
>saf>ui>frame.lisp
DEFINE-PVD-COMMAND
>saf>ui>frame.lisp

Description: None

2.1.4.4 DO-NOTHING-COMMAND-LOOP

Definition 4

>saf>ui>frame.lisp
Type: Function
Arguments: (PROGRAM)
Outputs:
Calls: None
Called by: None
Description: Do Nothing Top Level Command Loop

2.1.4.5 MAKE-PVD-FRAME

Definition 5

>saf>ui>frame.lisp
Type: Function
Arguments: (IO-BUFFER)
Outputs:
Calls: PVD
 >saf>ui>frame.lisp
 PVD
 >saf>ui>frame.lisp
Called by: (METHOD TOP-LEVEL SAF)
 >saf>ui>frame.lisp
Description: None

2.1.4.6 SET-UP-PVD-SCALE

Definition 6

>saf>ui>frame.lisp
Type: Function
Arguments: (&OPTIONAL (PVD-DISPLAY *PVD-DISPLAY*))
Outputs:

Calls: *ZOOM-LEVELS*
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
CURRENT-SCALE
>map>zoom-levels.lisp
CURRENT-ANCHOR-X
>map>zoom-levels.lisp
CURRENT-ANCHOR-Y
>map>zoom-levels.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
Called by: EXPOSE-PVD
>saf>ui>frame.lisp
Description: None

2.1.4.7 EXPOSE-PVD

Definition 7

>saf>ui>frame.lisp
Type: Function
Arguments: (&OPTIONAL (PVD-FRAME *PVD-FRAME*))
Outputs:
Calls: *PVD-FRAME*
>saf>sys>vars.lisp
SET-UP-PVD-SCALE
>saf>ui>frame.lisp
Called by: (INITIALIZATION WARM-INITIALIZATION-LIST Expose PVD)
No Source File Record
WARM-INITIALIZATION-LIST
>rel-7-2>sys>ltop.lisp
Description: None

2.1.4.8 Expose PVD

Definition 8

>saf>ui>frame.lisp
Type: ADD-INITIALIZATION
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.4.9 CLEAR-SAF-HISTORY

Definition 9

>saf>ui>frame.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *OPFOR-IO*
>saf>sys>vars.lisp
Called by: (INITIALIZATION BEFORE-COLD-INITIALIZATION-LIST Clear SAF History)
No Source File Record
Description: None

2.1.4.10 Clear SAF History

Definition 10

>saf>ui>frame.lisp
Type: ADD-INITIALIZATION
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.4.11 (SET-HIGHLIGHTED-PRESENTATION MAP-WINDOW)

Definition 11

>saf>ui>frame.lisp
Type: DEFWHOPPER
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.4.12 (WHO-LINE-DOCUMENTATION-STRING MAP-WINDOW)

Definition 12

>saf>ui>frame.lisp
Type: DEFWHOPPER
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.4.13 SAF

Definition 13

>saf>ui>frame.lisp

Type: DEFINE-PROGRAM-FRAMEWORK

Arguments: ()

Outputs:

Calls: PVD

>saf>ui>frame.lisp

PVD

>saf>ui>frame.lisp

Called by: GET-FORMATION-DATA

>saf>sys>interim-model.lisp

(METHOD TOP-LEVEL CONFIGURATION-MENU)

>saf>interface>formations.lisp

(METHOD TOP-LEVEL OBJECT-MENU)

>saf>interface>object-menu.lisp

(METHOD TOP-LEVEL MODEL-MENU)

>saf>interface>model-menu.lisp

READ-AND-MAKE-INSTANCES

>saf>sys>new-storage.lisp

MKATOM

>saf>sys>new-storage.lisp

LEFT-ON- CREATE UNITS -AT-BATTLEMASTER-SAF-MENU-COMMAND

>saf>bmi>commands.lisp

LEFT-ON- LOAD SELECTIONS -AT-BATTLEMASTER-SAF-MENU-

COMMAND

>saf>bmi>commands.lisp

LEFT-ON- SAVE SELECTIONS -AT-BATTLEMASTER-SAF-MENU-

COMMAND

>saf>bmi>commands.lisp

LEFT-ON- RESTORE EXERCISE -AT-BATTLEMASTER-SAF-MENU-

COMMAND

>saf>bmi>commands.lisp

LEFT-ON- CLEAR SELECTIONS -AT-BATTLEMASTER-SAF-MENU-

COMMAND

>saf>bmi>commands.lisp

LEFT-ON- SELECT UNITS -AT-BATTLEMASTER-SAF-MENU-COMMAND

>saf>bmi>commands.lisp

DEFINE-SAF-COMMAND

>saf>ui>frame.lisp

MAYBE-LOAD-FORMATION-DATA

>saf>bmi>utilities.lisp

OPFOR-SYMBOL

>saf>bmi>utilities.lisp

CONVERT-ALIGNMENT

>saf>bmi>utilities.lisp

CONVERT-UNIT-SIZE

>saf>bmi>utilities.lisp

DRAW-SANDBOX-UNIT

>saf>sandbox>sandbox-object.lisp

ERASE-SANDBOX-OBJECT

>saf>sandbox>sandbox-object.lisp

DRAW-SANDBOX-OBJECT

```

>saf>sandbox>sandbox-object.lisp
(METHOD INSERT-POINT-AFTER GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD INITIALIZE-POINTS GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD INSERT-POINT-BEFORE LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-AFTER LINE)
>saf>cm>line.lisp
(METHOD INITIALIZE-POINTS LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD INITIALIZE-POINTS ROUTE)
>saf>cm>route.lisp
NET-MSG
>saf>rudp>outgoing.lisp
DEF-PACKET-HANDLER
>saf>rudp>handle-incoming.lisp
DEFSTRUCT-SLOT-VAL-PAIRS
>saf>sys>reader-macros.lisp
SANDBOX-READER-MACRO
>saf>sys>reader-macros.lisp

```

Description: None

2.1.4.14 (METHOD MAKE-INSTANCE SAF AFTER)

Definition 14

```

>saf>ui>frame.lisp
Type: Method
Arguments: (&REST INIT-ARGS)
Outputs:
Calls: *PVD-FRAME*
>saf>sys>vars.lisp
*OPFOR-FRAME*
>saf>sys>vars.lisp
*SANDBOX*
>saf>sys>vars.lisp
*RUDP-PROCESS-LAST-CYCLE*
>saf>ui>processes.lisp
PROCESS-RUDP-PACKETS
>saf>ui>processes.lisp
MAKE-RUDP-PROCESS
>saf>ui>processes.lisp
MAKE-UPDATE-PROCESS
>saf>ui>processes.lisp

```

UPDATE-PROCESS-LAST-CYCLE
>saf>sys>update-process.lisp
UPDATE-TOP-LEVEL
>saf>sys>update-process.lisp
SANDBOX
>saf>sandbox>sandbox.lisp

Called by: None
Description: None

2.1.4.15 (METHOD TOP-LEVEL SAF)

Definition 15

>saf>ui>frame.lisp
Type: Method
Arguments: (&REST ARGS)
Outputs:
Calls: *QUAD-TREE*
>map>terrain-vars.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
PVD-FRAME
>saf>sys>vars.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
PVD-LEGEND
>saf>sys>vars.lisp
OPFOR-FRAME
>saf>sys>vars.lisp
OPFOR-IO
>saf>sys>vars.lisp
RADIO-OUTPUT
>saf>sys>vars.lisp
BMI-PROGRAM
>saf>sys>vars.lisp
INTERFACE-TO-UPDATE-PROCESS-QUEUE
>saf>sys>vars.lisp
GET-LOCAL-HOST-SAF-PORT
>saf>network>vars.lisp
RUDP-OUTPUT-STREAM
>saf>rudp>vars.lisp
RUDP-OUTPUT-STREAM
>saf>rudp>vars.lisp
MOUSE-FLIP-SCREEN
>saf>ui>mouse-interface.lisp
FIND-.MOUSE
>saf>ui>mouse-interface.lisp
DEFAULT-BATTALION-NUMBER

```
>saf>bmi>bmi-frame.lisp  
MAKE-PVD-FRAME  
>saf>ui>frame.lisp  
SETUP-COLOR-ALUS  
>saf>color-window>color-alus.lisp
```

Called by: None

Description: None

2.1.4.16 (METHOD GET-RUDP-PROCESS PROGRAM-FRAME)

Definition 16

```
>saf>ui>frame.lisp
```

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.1.4.17 (METHOD GET-UPDATE-PROCESS PROGRAM-FRAME)

Definition 17

```
>saf>ui>frame.lisp
```

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.1.5 CSU ui>commands.lisp

This unit contains the menu commands for the PVD, definitions of command processor commands available to the SAF user, and the presentation action for the PVD command menu. The macro define-pvd-menu-command encapsulates the code needed to create new PVD menu commands, and automatically highlights them. This macro is then called to define a number of such commands.

PVD menu commands include zooming, panning, scale selection, refresh, and terrain options. CP commands, including, for example, unit-ops, batallion-ops, clear-message-log, and set-viewport, are described in the SAF User's Guide.

2.1.5.1 DEFINE-PVD-MENU-COMMAND

Definition 1

```
>saf>ui>commands.lisp
```

Type: Macro

Arguments: ((NAME PRETTY-NAME) &BODY BODY)

Outputs:

Calls: HIGHLIGHT-BUTTON
>saf>ui>frame-utils.lisp
PVD
>saf>ui>frame.lisp
PVD
>saf>ui>frame.lisp
DEFINE-PVD-MENU-COMMAND
>saf>ui>commands.lisp
Called by: DEFINE-PVD-MENU-COMMAND
>saf>ui>commands.lisp
Description: None

2.1.5.2 (COM-ZOOM-IN Zoom In)

Definition 2

>saf>ui>commands.lisp
Type: DEFINE-PVD-MENU-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.5.3 (COM-PAN Pan)

Definition 3

>saf>ui>commands.lisp
Type: DEFINE-PVD-MENU-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.5.4 GET-ELEVATION

Definition 4

>saf>ui>commands.lisp
Type: Function
Arguments: (X Y)
Outputs:
Calls: HEIGHT-AT-POINT
>map>draw-terrain.lisp
OPFOR-IO
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
FORMAT-COORDINATES
>saf>sys>utilities.lisp

Called by: (METHOD COM-PAN-INTERNAL PVD)

No Source File Record

Description: Determine Elevation

2.1.5.5 (COM-ZOOM-OUT Zoom Out)

Definition 5

>saf>ui>commands.lisp

Type: DEFINE-PVD-MENU-COMMAND

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.1.5.6 RESCALE-PVD-FROM-MENU

Definition 6

>saf>ui>commands.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *ZOOM-LEVELS*

>map>zoom-levels.lisp

CURRENT-ZOOM-LEVEL

>map>zoom-levels.lisp

SCALE-STRING

>map>zoom-levels.lisp

ZOOM-LEVELS

>map>zoom-levels.lisp

CURRENT-ZOOM-LEVEL

>map>zoom-levels.lisp

Called by: (METHOD COM-RESCALE-INTERNAL PVD)

No Source File Record

Description: None

2.1.5.7 (COM-RESCALE Map Scale)

Definition 7

>saf>ui>commands.lisp

Type: DEFINE-PVD-MENU-COMMAND

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.1.5.8 (COM-PDFRESH Refresh)

Definition 8

>saf>ui>commands.lisp
Type: DEFINE-PVD-MENU-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.5.9 (COM-TERRAIN-OPTIONS Terrain Options)

Definition 9

>saf>ui>commands.lisp
Type: DEFINE-PVD-MENU-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.5.10 PAN-TO-POINT

Definition 10

>saf>ui>commands.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *OPFOR-IO*
 >saf>sys>vars.lisp
 INTERFACE-TO-UPDATE-PROCESS-QUEUE
 >saf>sys>vars.lisp
 ADD-TO-UPDATE-QUEUE
 >saf>sys>macros.lisp
 SAY
 >saf>sys>macros.lisp
 PARSE-COORDS
 >saf>ui>commands.lisp
Called by: COM-PAN-TO-POINT
 >saf>ui>commands.lisp
Description: None

2.1.5.11 PARSE-COORDS

Definition 11

>saf>ui>commands.lisp
Type: Function
Arguments: (COORD-STRING)
Outputs:

Calls: *PVD-DISPLAY*
 >saf>sys>vars.lisp
Called by: PAN-TO-POINT
 >saf>ui>commands.lisp
 (PRESENTATION-FUNCTION WORLD-COORDS PARSER)
 No Source File Record
Description: None

2.1.5.12 COM-PAN-TO-POINT

Definition 12

 >saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: PAN-TO-POINT
 >saf>ui>commands.lisp
Called by: None
Description: None

2.1.5.13 COM-UNIT-OPS

Definition 13

 >saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.1.5.14 COM-BATTALION-OPS

Definition 14

 >saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: RUN-BATTALION-OPS
 >saf>ui>task-org.lisp
Called by: None
Description: None

2.1.5.15 COM-REFRESH-UNIT-DISPLAY

Definition 15

 >saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:

Calls: DISPLAY-TASK-ORG
 >saf>ui>task-org.lisp

Called by: None
Description: None

2.1.5.16 COM-CLEAR-MESSAGE-LOG

Definition 16

>saf>ui>commands.lisp

Type: CP Command

Arguments: ()

Outputs:

Calls: *OPFOR-FRAME*
 >saf>sys>vars.lisp

Called by: None
Description: None

2.1.5.17 COM-CLEAR

Definition 17

>saf>ui>commands.lisp

Type: CP Command

Arguments: ()

Outputs:

Calls: STANDALONEP
 >saf>network>connection.lisp
 COMPLETE-C2-RESET
 >saf>network>top-level.lisp
 RESET-SIM
 >saf>network>top-level.lisp

Called by: None
Description: None

2.1.5.18 COM-SET-VIEWPORT

Definition 18

>saf>ui>commands.lisp

Type: CP Command

Arguments: ()

Outputs:

Calls: *VIEW-VEHICLE-ID*
 >saf>sys>vars.lisp
 UNHIGHLIGHT-VIEWPORTS
 >saf>objects>simnet-agent.lisp
 HIGHLIGHT-VIEWPORTS
 >saf>objects>simnet-agent.lisp

Called by: None
Description: None

2.1.5.19 COM-BOMB-BUTTON

Definition 19

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: BOMB-BUTTON
>saf>network>commands.lisp
Called by: None
Description: None

2.1.5.20 COM-SAF-SET-BOMB-PARAMETERS

Definition 20

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: SET-BOMB-PARAMETERS
>saf>network>commands.lisp
Called by: None
Description: None

2.1.5.21 COM-ROBO-COP-CONTROL

Definition 21

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: ROBO-COP-CONTROL
>saf>ui>parameter-menus.lisp
Called by: None
Description: None

2.1.5.22 COM-SET-OPFOR-PARAMETERS

Definition 22

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: ROBO-COP-CONTROL
>saf>ui>parameter-menus.lisp
Called by: None
Description: None

2.1.5.23 COM-SAVE-SCENARIO

Definition 23

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: NAME-AND-STORE-SCENARIO
 >saf>sys>new-storage.lisp
Called by: None
Description: None

2.1.5.24 COM-DELETE-SCENARIOS

Definition 24

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: CHOOSE-SCENARIOS-TO-DELETE
 >saf>sys>new-storage.lisp
Called by: None
Description: None

2.1.5.25 COM-DELETE-EXERCISES

Definition 25

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: CHOOSE-SCENARIOS-TO-DELETE
 >saf>sys>new-storage.lisp
Called by: None
Description: None

2.1.5.26 COM-DELETE-OVERLAYS

Definition 26

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: CHOOSE-OVERLAYS-TO-DELETE
 >saf>sys>new-storage.lisp
Called by: None
Description: None

2.1.5.27 COM-STORE-SCENARIO

Definition 27

>saf>ui>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: NAME-AND-STORE-SCENARIO
 >saf>sys>new-storage.lisp
Called by: None
Description: None

2.1.5.28 SUPERIOR-CONTEXT

Definition 28

>saf>ui>commands.lisp
Type: Function
Arguments: (CONTEXT)
Outputs:
Calls: None
Called by: ROOT-INPUT-CONTEXT
 >saf>ui>commands.lisp
Description: None

2.1.5.29 ROOT-INPUT-CONTEXT

Definition 29

>saf>ui>commands.lisp
Type: Function
Arguments: (CONTEXT)
Outputs:
Calls: SUPERIOR-CONTEXT
 >saf>ui>commands.lisp
 ROOT-INPUT-CONTEXT
 >saf>ui>commands.lisp
Called by: (PRESENTATION-MOUSE-HANDLER PVD-COMMAND-MENU)
 No Source File Record
 ROOT-INPUT-CONTEXT
 >saf>ui>commands.lisp
Description: None

2.1.5.30 PVD-COMMAND-MENU

Definition 30

>saf>ui>commands.lisp
Type: DEFINE-PRESENTATION-ACTION
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2 COMMANDER CSC

The Commander CSC contains the code to allow the SAF operator to control his units and vehicles. The display window on the monochrome monitor in the commander mode contains a task organization pane, a message log pane, an OPORD pane, and a lisp interaction pane. The OPORD pane and the task organization pane are described below. The message log displays any commands which the user has issued to the own units and any reports which have come from the own units. The reports are written to the message log directly by the RUDP process when the messages are received. The commands are written by the user interface process as the commands are sent over to the RUDP process for transmission. The lisp interaction pane is used to type in text commands such as the command to go into battlemaster mode and the password required to enter that mode. Figure 2.2-1 shows the sub-level CSCs of the Commander CSC.

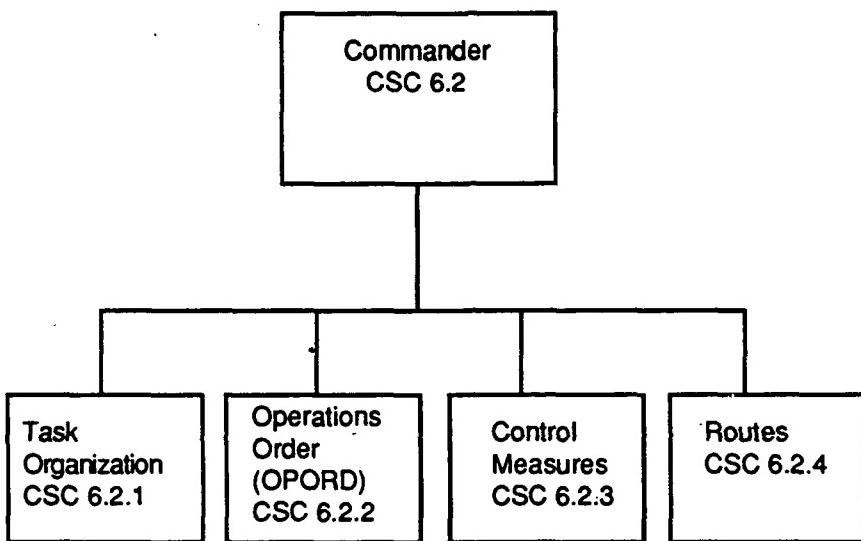


Figure 2.2-1 CSCs of the Commander CSC

2.2.1 Task Organization CSC

This CSC contains the code to run the task organization pane. This code is invoked by the user process in response to user commands. The task organization pane displays the hierarchy of the forces commanded by this workstation. The hierarchy is displayed in graphical form using the military symbols for the units. The display of the hierarchy can be truncated at any level. By clicking the middle or right mouse button on a unit, you access a number of menu items which allow you to change the level of the display or the position of the units on the task organization pane. You can also issue commands to the stealth vehicle (used for the out-the-window view) to change its display to that unit's out the window view.

The effect of clicking left on a unit in the task organization display is determined by the current OPORD mode. This mode is selected by clicking left on the appropriate button on the OPORD pane. The modes are TAC/E, status, and subordinate unit tasking. In the TAC/E mode, clicking on a unit allows you to give quick commands to the units, in the

subordinate unit tasking mode it allows you to assign graphical orders to subunits, and in the status mode it requests the unit to send back a status report which will be displayed in the message log. This CSC contains the following CSU:

ui>task-org.lisp csu

2.2.1.1 CSU ui>task-org.lisp

This unit contains the software behind the task-organization pane on the monochrome display. It includes the definition of the *task-org-pane* flavor, and related methods and functions for presentation and display. Battalion presentation and associated functions are also included.

2.2.1.1.1 WORKSTATION-BATTALION

Definition 1

>saf>ui>task-org.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER MOUSE-WORKSTATION-BATTALION)
No Source File Record
DISPLAY-WORKSTATION-BATTALION
>saf>ui>task-org.lisp
(PROPERTY WORKSTATION-BATTALION DEFTYPE)
No Source File Record
Description: None

2.2.1.1.2 MOUSE-WORKSTATION-BATTALION

Definition 2

>saf>ui>task-org.lisp
Type: DEFINE-PRESENTATION-TO-COMMAND-TRANSLATOR
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.1.1.3 RUN-BATTALION-OPS

Definition 3

>saf>ui>task-org.lisp
Type: Function
Arguments: (BUTTON)
Outputs:

Calls: MENU-CHOOSE
>saf>sys>utilities.lisp
OPORD
>saf>ui>opord.lisp
Called by: COM-BATTALION-OPS
>saf>ui>commands.lisp
Description: None

2.2.1.1.4 DISPLAY-WORKSTATION-BATTALION

Definition 4

>saf>ui>task-org.lisp
Type: Function
Arguments: (PROGRAM STREAM)
Outputs:
Calls: WORKSTATION-BATTALION
>saf>ui>task-org.lisp
GET-BATTALION-NUMBER
>saf>bmi>bmi-frame.lisp
Called by: SAF PROGRAM-FRAME-OPTIONS
>saf>ui>frame.lisp
Description: None

2.2.1.1.5 DISPLAY-FOR-TASK-ORG

Definition 5

>saf>ui>task-org.lisp
Type: Function
Arguments: (UNIT STREAM X Y)
Outputs:
Calls: *UNIT-ICON-TABLE*
>saf>simnet-objects>draw-units.lisp
UNIT-ICON
>saf>simnet-objects>draw-units.lisp
Called by: (METHOD DRAW-TASK-ORGANIZATION TASK-ORG-PANE)
>saf>ui>task-org.lisp
Description: None

2.2.1.1.6 INFERIORS-FOR-TASK-ORG

Definition 6

>saf>ui>task-org.lisp
Type: Function
Arguments: (UNIT)
Outputs:
Calls: VEH-DESTROYED
>saf>sys>constants.lisp
VEHICLE-STATUS
>saf>network>packet-layouts.lisp
IS-STATUS

>saf>simnet-objects>macros.lisp
GET-SUBORDINATES-INSTANCES
>saf>objects>simnet-agent.lisp
Called by: (METHOD DRAW-TASK-ORGANIZATION TASK-ORG-PANE)
>saf>ui>task-org.lisp
Description: None

2.2.1.1.7 HIGHLIGHT-ON-TASK-ORG

Definition 7

>saf>ui>task-org.lisp
Type: Function
Arguments: (UNIT)
Outputs:
Calls: *OPFOR-FRAME*
>saf>sys>vars.lisp
Called by: HIGHLIGHT-VIEWPORTS
>saf>objects>simnet-agent.lisp
UNHIGHLIGHT-VIEWPORTS
>saf>objects>simnet-agent.lisp
Description: None

2.2.1.1.8 TASK-ORG-PANE

Definition 8

>saf>ui>task-org.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.1.1.9 (SET-HIGHLIGHTED-PRESENTATION TASK-ORG-PANE)

Definition 9

>saf>ui>task-org.lisp
Type: DEFWHOPPER
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.1.1.10 (METHOD SET-HIGHLIGHTED-PRESENTATION TASK-ORG-PANE AFTER)

Definition 10

>saf>ui>task-org.lisp

Type: Method

Arguments: (PRESENTATION &OPTIONAL DOCUMENTATION SHIFTS MORE-DOCUMENTATION)

Outputs:

Calls: SIMNET-AGENT

>saf>objects>simnet-agent.lisp

SIMNET-AGENT

>saf>objects>simnet-agent.lisp

SIMNET-AGENT

>saf>objects>simnet-agent.lisp

Called by: None

Description: None

2.2.1.1.11 DISPLAY-TASK-ORG

Definition 11

>saf>ui>task-org.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *OPFOR-FRAME*

>saf>sys>vars.lisp

Called by: COM-REFRESH-UNIT-DISPLAY

>saf>ui>commands.lisp

DELAYED-DISPLAY-UNIT-GRAPH-1

>saf>simnet-objects>vehicle-tracking.lisp

(METHOD HIDE-INFERIORS SIMNET-AGENT)

>saf>objects>simnet-agent.lisp

(METHOD SHOW-INFERIORS SIMNET-AGENT)

>saf>objects>simnet-agent.lisp

(METHOD MOUSE-GESTURE-ITEM-LIST SIMNET-AGENT APPEND)

>saf>objects>simnet-agent.lisp

Description: None

2.2.1.1.12 (METHOD DRAW-TASK-ORGANIZATION TASK-ORG-PANE)

Definition 12

>saf>ui>task-org.lisp

Type: Method

Arguments: ()

Outputs:

Calls: LOCAL

>saf>network>vars.lisp

TOP-LEVEL-UNITS

>saf>simnet-objects>vehicle-tracking.lisp

DISPLAY-FOR-TASK-ORG
>saf>ui>task-org.lisp
INFERIORS-FOR-TASK-ORG
>saf>ui>task-org.lisp

Called by: None
Description: None

2.2.1.13 (METHOD DRAW-TASK-ORGANIZATION TASK-ORG-PANE AFTER)

Definition 13

>saf>ui>task-org.lisp

Type: Method
Arguments: ()
Outputs:
Calls: HIGHLIGHT-VIEWPORTS
>saf>objects>simnet-agent.lisp
Called by: None
Description: None

2.2.1.14 TASK-ORG-PANE

Definition 14

>saf>ui>task-org.lisp

Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: SAF PROGRAM-FRAME-OPTIONS
>saf>ui>frame.lisp
Description: None

2.2.2 Operations Order (OPORD) CSC

This CSC contains the code to define the mouse buttons which change the OPORD mode plus the code to implement the OPORD commands when one button is selected. The OPORD pane contains buttons to place the command frame into the TAC/E, subordinate unit tasking, operations order, or status mode. In addition, it contains buttons for saving the exercise state or the overlays which have been created. This CSC has the code to present a menu with TAC/E commands and then execute the chosen command. It also has the code to put up the subordinate unit tasking menu and generate orders for subordinated units. It also contains the interface to the overlay code. This CSC contains the following CSUs:

ui>opord.lisp csu
objects>intervention.lisp csu
ui>subordinate-tasking.lisp csu
cm>overlay.lisp csu

2.2.2.1 CSU ui>opord.lisp

This unit contains the data-structures and routines that implement the Oporder Metaphor window. It defines flavors for paragraphs, subparagraphs, and operations buttons, along with their associated methods. SAF flavor methods are defined to display paragraphs, operations, and opord choices. SAF commands for selecting subparagraphs and ops-buttons are also defined. Finally, *opord*, the top-level function for the Operations Order system, is defined.

2.2.2.1.1 *OPORD-MODE*

Definition 1

>saf>ui>opord.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: OPORD

>saf>ui>opord.lisp

(METHOD COM-SELECT-BUTTON-INTERNAL SAF)

No Source File Record

(METHOD COM-SELECT-SUBPARAGRAPH-INTERNAL SAF)

No Source File Record

Description: None

2.2.2.1.2 *ENABLED-FONT*

Definition 2

>saf>ui>opord.lisp

Type: Parameter

Arguments: ()

Outputs:

Calls: None

Called by: (METHOD FONT OPORD-BUTTON)

>saf>ui>opord.lisp

Description: None

2.2.2.1.3 *DISABLED-FONT*

Definition 3

>saf>ui>opord.lisp

Type: Parameter

Arguments: ()

Outputs:

Calls: None

Called by: (METHOD DISPLAY PARAGRAPH)

>saf>ui>opord.lisp

(METHOD FONT OPORD-BUTTON)

>saf>ui>opord.lisp

Description: None

2.2.2.1.4 *PREVIOUS-BUTTON-BOX*

Definition 4

>saf>ui>opord.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD DISPLAY-OPORD-CHOICES SAF)
>saf>ui>opord.lisp
(METHOD HIGHLIGHT OPORD-BUTTON)
>saf>ui>opord.lisp
Description: None

2.2.2.1.5 OPORD-BUTTON

Definition 5

>saf>ui>opord.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.1.6 (METHOD FONT OPORD-BUTTON)

Definition 6

>saf>ui>opord.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *ENABLED-FONT*
>saf>ui>opord.lisp
DISABLED-FONT
>saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.7 (METHOD HIGHLIGHT OPORD-BUTTON)

Definition 7

>saf>ui>opord.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *OPFOR-FRAME*
>saf>sys>vars.lisp
PREVIOUS-BUTTON-BOX
>saf>ui>opord.lisp

Called by: None
Description: None

2.2.2.1.8 OPORD-BUTTON

Definition 8

>saf>ui>opord.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: OPS-BUTTON
 >saf>ui>opord.lisp
 SUBPARAGRAPH
 >saf>ui>opord.lisp
Description: None

2.2.2.1.9 PARAGRAPH

Definition 9

>saf>ui>opord.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.1.10 MAKE-PARAGRAPH

Definition 10

>saf>ui>opord.lisp
Type: Function
Arguments: (&KEY NAME SUBPARAGRAPHS)
Outputs:
Calls: NAME
 >saf>sysdcl.lisp
 PARAGRAPH
 >saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.11 (METHOD DISPLAY PARAGRAPH)

Definition 11

>saf>ui>opord.lisp
Type: Method
Arguments: (STREAM COLUMN)
Outputs:

Calls: *DISABLED-FONT*

>saf>ui>opord.lisp

Called by: None

Description: None

2.2.2.1.12 SUBPARAGRAPH

Definition 12

>saf>ui>opord.lisp

Type: Flavor

Arguments: ()

Outputs:

Calls: OPORD-BUTTON

>saf>ui>opord.lisp

Called by: None

Description: None

2.2.2.1.13 MAKE-SUBPARAGRAPH

Definition 13

>saf>ui>opord.lisp

Type: Function

Arguments: (&KEY NAME KEYWORD ENABLED)

Outputs:

Calls: NAME

>saf>sysdcl.lisp

SUBPARAGRAPH

>saf>ui>opord.lisp

Called by: None

Description: None

2.2.2.1.14 (METHOD DISPLAY SUBPARAGRAPH)

Definition 14

>saf>ui>opord.lisp

Type: Method

Arguments: (STREAM COLUMN)

Outputs:

Calls: SUBPARAGRAPH

>saf>ui>opord.lisp

Called by: None

Description: None

2.2.2.1.15 PARAGRAPH

Definition 15

>saf>ui>opord.lisp

Type: COMPILE-FLAVOR-METHODS

Arguments: ()

Outputs:

Calls: None
Called by: MAKE-PARAGRAPH
 >saf>ui>opord.lisp
Description: None

2.2.2.1.16 SUBPARAGRAPH

Definition 16

>saf>ui>opord.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER SELECT-SUBPARAGRAPH)
 No Source File Record
 (METHOD COM-SELECT-SUBPARAGRAPH-PARSER SAF)
 No Source File Record
 (METHOD DISPLAY SUBPARAGRAPH)
 >saf>ui>opord.lisp
 MAKE-SUBPARAGRAPH
 >saf>ui>opord.lisp
Description: None

2.2.2.1.17 *PARAGRAPH-DATA*

Definition 17

>saf>ui>opord.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD DISPLAY-PARAGRAPHS SAF)
 >saf>ui>opord.lisp
Description: None

2.2.2.1.18 OPS-BUTTON

Definition 18

>saf>ui>opord.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: OPORD-BUTTON
 >saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.19 MAKE-OPS-BUTTON

Definition 19

>saf>ui>opord.lisp
Type: Function
Arguments: (&KEY NAME KEYWORD ENABLED)
Outputs:
Calls: NAME
 >saf>sysdcl.lisp
 OPS-BUTTON
 >saf>ui>opord.lisp
 OPS-BUTTON
 >saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.20 (METHOD DISPLAY OPS-BUTTON)

Definition 20

>saf>ui>opord.lisp
Type: Method
Arguments: (STREAM COLUMN)
Outputs:
Calls: OPS-BUTTON
 >saf>ui>opord.lisp
 OPS-BUTTON
 >saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.21 OPS-BUTTON

Definition 21

>saf>ui>opord.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER SELECT-OPS-BUTTON)
 No Source File Record
 (METHOD COM-SELECT-BUTTON-PARSER SAF)
 No Source File Record
 (METHOD DISPLAY OPS-BUTTON)
 >saf>ui>opord.lisp
 MAKE-OPS-BUTTON
 >saf>ui>opord.lisp
Description: None

2.2.2.1.22 OPS-BUTTON

Definition 22

>saf>ui>opord.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER SELECT-OPS-BUTTON)
No Source File Record
(METHOD COM-SELECT-BUTTON-PARSER SAF)
No Source File Record
(METHOD DISPLAY OPS-BUTTON)
>saf>ui>opord.lisp
MAKE-OPS-BUTTON
>saf>ui>opord.lisp
Description: None

2.2.2.1.23 *OPERATIONS-BUTTONS*

Definition 23

>saf>ui>opord.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD DISPLAY-OPERATIONS SAF)
>saf>ui>opord.lisp
Description: None

2.2.2.1.24 (METHOD DISPLAY-PARAGRAPHS SAF)

Definition 24

>saf>ui>opord.lisp
Type: Method
Arguments: (STREAM COLUMN)
Outputs:
Calls: *PARAGRAPH-DATA*
>saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.25 (METHOD DISPLAY-OPERATIONS SAF)

Definition 25

>saf>ui>opord.lisp
Type: Method
Arguments: (STREAM COLUMN)
Outputs:

Calls: *OPERATIONS-BUTTONS*
>saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.26 (METHOD DISPLAY-OPORD-CHOICES SAF)

Definition 26

>saf>ui>opord.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: *OPFOR-FRAME*
>saf>sys>vars.lisp
PREVIOUS-BUTTON-BOX
>saf>ui>opord.lisp
Called by: None
Description: None

2.2.2.1.27 (COM-SELECT-SUBPARAGRAPH)

Definition 27

>saf>ui>opord.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.1.28 SELECT-SUBPARAGRAPH

Definition 28

>saf>ui>opord.lisp
Type: DEFINE-PRESENTATION-TO-COMMAND-TRANSLATOR
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.1.29 (COM-SELECT-BUTTON)

Definition 29

>saf>ui>opord.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:

Calls: None

Called by: None

Description: None

2.2.2.1.30 SELECT-OPS-BUTTON

Definition 30

>saf>ui>opord.lisp

Type: DEFINE-PRESENTATION-TO-COMMAND-TRANSLATOR

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.2.1.31 OPORD

Definition 31

>saf>ui>opord.lisp

Type: Function

Arguments: (UNIT)

Outputs:

Calls: SIMNET-AGENT

>saf>objects>simnet-agent.lisp

SIMNET-AGENT

>saf>objects>simnet-agent.lisp

SIMNET-AGENT

>saf>objects>simnet-agent.lisp

OPORD-MODE

>saf>ui>opord.lisp

SUBORDINATE-TASK

>saf>ui>subordinate-tasking.lisp

Called by: RUN-BATTALION-OPS

>saf>ui>task-org.lisp

(METHOD MOUSE-GESTURE SIMNET-AGENT)

>saf>objects>simnet-agent.lisp

Description: None

2.2.2.2 CSU objects>intervention.lisp

This unit defines the function *intervene* that implements immediate interventions on *simnet-agent* instances. Because there are 17 different intervention types, *intervene* is defined using the Common Lisp macro *defgeneric*, to make available the Symbolics :*case* keyword. This allows the function to be broken up into separate methods as cases, based on the value of the *intervention-type* argument. This was done simply to make the definition lexically more modular; otherwise it would have been a single 4-page-long form.

Methods for *intervene* define intervention responses for the intervention-types rules-of-engagement, face-direction, halt, hold, enroute-movement, speed, altitude, follow-vehicle, command-from-simulator, go-to-location, resupply, land, attack, resume, resume-all-subordinates, rejoin-unit, and formation.

2.2.2.2.1 INTERVENE

Definition 1

>saf>objects>intervention.lisp
Type: DEFGENERIC
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD IMMEDIATE-INTERVENTION SIMNET-AGENT)
>saf>objects>simnet-agent.lisp
Description: None

2.2.2.2.2 (METHOD INTERVENE SIMNET-AGENT OTHERWISE)

Definition 2

>saf>objects>intervention.lisp
Type: Method
Arguments: (UNMATCHED-CASE)
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.2.3 (METHOD INTERVENE SIMNET-AGENT RULES-OF-ENGAGEMENT)

Definition 3

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.2.4 (METHOD INTERVENE SIMNET-AGENT FACE-DIRECTION)

Definition 4

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: FACE-DIRECTION
>saf>objects>simnet-agent.lisp
FACE-DIRECTION
>saf>objects>simnet-agent.lisp
Called by: None
Description: None

2.2.2.2.5 (METHOD INTERVENE SIMNET-AGENT HALT)

Definition 5

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: HALT
 >saf>network>vars.lisp
 NET-MSG
 >saf>rudp>outgoing.lisp
Called by: None
Description: None

2.2.2.2.6 (METHOD INTERVENE SIMNET-AGENT HOLD)

Definition 6

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: HOLD-HOVER
 >saf>sys>vars.lisp
 HOLD-ORBIT
 >saf>sys>vars.lisp
 MENU-CHOOSE
 >saf>sys>utilities.lisp
 HOLD
 >saf>network>vars.lisp
 NET-MSG
 >saf>rudp>outgoing.lisp
Called by: None
Description: None

2.2.2.2.7 (METHOD INTERVENE SIMNET-AGENT ENROUTE-MOVEMENT)

Definition 7

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: MENU-CHOOSE
 >saf>sys>utilities.lisp
 ENROUTE-MOVEMENT
 >saf>network>vars.lisp
 NET-MSG
 >saf>rudp>outgoing.lisp
Called by: None
Description: None

2.2.2.2.8 (METHOD INTERVENE SIMNET-AGENT SPEED)

Definition 8

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *LAST-UNITS-SPEED*
>saf>sys>vars.lisp
SPEED-TO-M/SEC
>saf>sys>utilities.lisp
CHANGE-SPEED
>saf>network>vars.lisp
NET-MSG
>saf>rudp>outgoing.lisp
Called by: None
Description: None

2.2.2.2.9 (METHOD INTERVENE SIMNET-AGENT ALTITUDE)

Definition 9

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *LAST-UNITS-LENGTH*
>saf>sys>vars.lisp
LAST-UNITS-ALTITUDE
>saf>sys>vars.lisp
CHANGE-ALTITUDE
>saf>network>vars.lisp
NET-MSG
>saf>rudp>outgoing.lisp
Called by: None
Description: None

2.2.2.2.10 (METHOD INTERVENE SIMNET-AGENT FOLLOW-VEHICLE)

Definition 10

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: VEC-ROTATE
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
SINGLE-POINT
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp

LAST-UNITS-LENGTH
>saf>sys>vars.lisp
FOLLOW-VEHICLE
>saf>network>vars.lisp
NET-MSG
>saf>rudp>outgoing.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp

Called by: None

Description: None

2.2.2.2.11 (METHOD INTERVENE SIMNET-AGENT COMMAND-FROM-SIMULATOR)

Definition 11

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *PVD-DISPLAY*
>saf>sys>vars.lisp
SIMULATOR-IN-COMMAND
>saf>network>vars.lisp
NET-MSG
>saf>rudp>outgoing.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp

Called by: None

Description: None

2.2.2.2.12 (METHOD INTERVENE SIMNET-AGENT GO-TO-LOCATION)

Definition 12

>saf>objects>intervention.lisp
Type: Method
Arguments: ()
Outputs:
Calls: SINGLE-POINT
>map>control.lisp
DEFAULT-OUTPUT-COORDINATE-SYSTEM
>saf>sys>vars.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
HOLD-HOVER

```
>saf>sys>vars.lisp  
HOLD-ORBIT  
>saf>sys>vars.lisp  
POINT  
>saf>interface>model-menu.lisp  
GO-TO-POINT  
>saf>network>vars.lisp  
NET-MSG  
>saf>rudp>outgoing.lisp  
WORLD-COORDS  
>saf>cm>control-measure.lisp  
POINT  
>saf>interface>model-menu.lisp
```

Called by: None
Description: None

2.2.2.2.13 (METHOD INTERVENE SIMNET-AGENT RESUPPLY)

Definition 13

```
>saf>objects>intervention.lisp  
Type: Method  
Arguments: ()  
Outputs:  
Calls: *PVD-DISPLAY*  
>saf>sys>vars.lisp  
RESUPPLY  
>saf>network>vars.lisp  
NET-MSG  
>saf>rudp>outgoing.lisp  
SIMNET-AGENT  
>saf>objects>simnet-agent.lisp  
SIMNET-AGENT  
>saf>objects>simnet-agent.lisp  
SIMNET-AGENT  
>saf>objects>simnet-agent.lisp
```

Called by: None
Description: None

2.2.2.2.14 (METHOD INTERVENE SIMNET-AGENT LAND)

Definition 14

```
>saf>objects>intervention.lisp  
Type: Method  
Arguments: ()  
Outputs:  
Calls: SINGLE-POINT  
>map>control.lisp  
*PVD-DISPLAY*  
>saf>sys>vars.lisp  
FORMAT-COORDINATES  
>saf>sys>utilities.lisp  
POINT
```

```
>saf>interface>model-menu.lisp  
LAND  
>saf>network>vars.lisp  
NET-MSG  
>saf>rudp>outgoing.lisp  
WORLD-COORDS  
>saf>cm>control-measure.lisp  
POINT  
>saf>interface>model-menu.lisp
```

Called by: None

Description: None

2.2.2.2.15 (METHOD INTERVENE SIMNET-AGENT ATTACK)

Definition 15

```
>saf>objects>intervention.lisp
```

Type: Method

Arguments: ()

Outputs:

Calls: RUBBER-LINE
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
FORMAT-COORDINATES
>saf>sys>utilities.lisp
ATTACK
>saf>network>vars.lisp
RUNNING-FIRE-ATTACK
>saf>network>vars.lisp
POP-UP-ATTACK
>saf>network>vars.lisp
NET-MSG
>saf>rudp>outgoing.lisp
WORLD-COORDS
>saf>cm>control-measure.lisp

Called by: None

Description: None

2.2.2.2.16 (METHOD INTERVENE SIMNET-AGENT RESUME)

Definition 16

```
>saf>objects>intervention.lisp
```

Type: Method

Arguments: ()

Outputs:

Calls: RESUME
>saf>network>vars.lisp
NET-MSG
>saf>rudp>outgoing.lisp

Called by: None

Description: None

2.2.2.2.17 (METHOD INTERVENE SIMNET-AGENT RESUME-ALL-SUBORDINATES)

Definition 17

>saf>objects>intervention.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.2.2.18 (METHOD INTERVENE SIMNET-AGENT REJOIN-UNIT)

Definition 18

>saf>objects>intervention.lisp

Type: Method

Arguments: ()

Outputs:

Calls: RESUME

>saf>network>vars.lisp

REJOIN-UNIT

>saf>network>vars.lisp

NET-MSG

>saf>rudp>outgoing.lisp

Called by: None

Description: None

2.2.2.2.19 (METHOD INTERVENE SIMNET-AGENT FORMATION)

Definition 19

>saf>objects>intervention.lisp

Type: Method

Arguments: ()

Outputs:

Calls: LINE

>saf>cm>line.lisp

CHANGE-FORMATION

>saf>network>vars.lisp

NET-MSG

>saf>rudp>outgoing.lisp

FORMATION

>saf>cm>control-measure.lisp

FORMATION

>saf>cm>control-measure.lisp

LINE

>saf>cm>line.lisp

LINE

>saf>cm>line.lisp

Called by: None

Description: None

2.2.2.3 CSU ui>subordinate-tasking.lisp

This unit contains the data-structures and code that implement the Subordinate Unit Tasking window. Included are functions to count frag orders, the overall program framework *subordinate-unit-tasking*, associated display methods, presentation types, the objects *unit-task* and *sub-task* and their associated methods, menu items, presentation translators and commands, display code, and an entry-point driving function, called *subordinate-task*, that calls the *subordinate-unit-tasking* program framework. Finally, a form is included that compiles the key flavor-methods.

2.2.2.3.1 *TOP-LEVEL-TASKING*

Definition 1

>saf>ui>subordinate-tasking.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: LOAD-SCENARIO

>saf>sys>new-storage.lisp

STORE-SCENARIO

>saf>sys>new-storage.lisp

SAVE-FOR-TASKING-P

>saf>sys>new-storage.lisp

RESET-ALL-OVERLAYS-AND-TASKS

>saf>ui>subordinate-tasking.lisp

CLEAR-TOP-LEVEL-TASKING

>saf>ui>subordinate-tasking.lisp

SUBORDINATE-TASK

>saf>ui>subordinate-tasking.lisp

Description: None

2.2.2.3.2 OVERLAY-IS-MODIFIED

Definition 2

>saf>ui>subordinate-tasking.lisp

Type: Function

Arguments: (OVERLAY)

Outputs:

Calls: None

Called by: (METHOD DISPLAY-OVERLAY-TASKING UNIT-TASK)

>saf>ui>subordinate-tasking.lisp

Description: None

2.2.2.3.3 (COMPILE LOAD EVAL)

Definition 3

>saf>ui>subordinate-tasking.lisp

Type: EVAL-WHEN

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.2.3.4 (METHOD SET-HIGHLIGHTED-PRESENTATION SUB-TASK-PANE AFTER)

Definition 4

>saf>ui>subordinate-tasking.lisp

Type: Method

Arguments: (PRESENTATION &OPTIONAL DOCUMENTATION SHIFTS MORE-DOCUMENTATION)

Outputs:

Calls: SIMNET-AGENT

>saf>objects>simnet-agent.lisp

SIMNET-AGENT

>saf>objects>simnet-agent.lisp

SIMNET-AGENT

>saf>objects>simnet-agent.lisp

UNIT-TASK-UNIT

>saf>ui>subordinate-tasking.lisp

UNIT

>saf>cm>control-measure.lisp

Called by: None

Description: None

2.2.2.3.5 *FRAG-ORDER-COUNT*

Definition 5

>saf>ui>subordinate-tasking.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: PRINT-FRAGO-COUNT

>saf>ui>subordinate-tasking.lisp

RESET-FRAGO-COUNT

>saf>ui>subordinate-tasking.lisp

FRAGO-COUNT

>saf>ui>subordinate-tasking.lisp

COUNT-FRAGO

>saf>ui>subordinate-tasking.lisp

Description: None

2.2.2.3.6 COUNT-FRAGO

Definition 6

>saf>ui>subordinate-tasking.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *FRAG-ORDER-COUNT*
 >saf>ui>subordinate-tasking.lisp
Called by: (METHOD COM-ISSUE-FRAG-ORDER-INTERNAL SUBORDINATE-UNIT-TASKING)
 No Source File Record
Description: None

2.2.2.3.7 FRAGO-COUNT

Definition 7

>saf>ui>subordinate-tasking.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *FRAG-ORDER-COUNT*
 >saf>ui>subordinate-tasking.lisp
Called by: None
Description: None

2.2.2.3.8 RESET-FRAGO-COUNT

Definition 8

>saf>ui>subordinate-tasking.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *FRAG-ORDER-COUNT*
 >saf>ui>subordinate-tasking.lisp
Called by: COMPLETE-C2-RESET
 >saf>network>top-level.lisp
Description: None

2.2.2.3.9 PRINT-FRAGO-COUNT

Definition 9

>saf>ui>subordinate-tasking.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *RADIO-OUTPUT*
 >saf>sys>vars.lisp
 FRAG-ORDER-COUNT
 >saf>ui>subordinate-tasking.lisp

Called by: None
Description: None

2.2.2.3.10 SUBORDINATE-UNIT-TASKING

Definition 10

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-PROGRAM-FRAMEWORK
Arguments: ()
Outputs:
Calls: None
Called by: LEFT-ON-EXECUTE OVERLAY-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
 >saf>patch>saf-6>saf-6-3.lisp
 SUBORDINATE-TASK
 >saf>ui>subordinate-tasking.lisp
 LEFT-ON-ISSUE FRAG ORDER-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
 >saf>ui>subordinate-tasking.lisp
 LEFT-ON-WARN OVERLAY-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
 >saf>ui>subordinate-tasking.lisp
 LEFT-ON-DONE-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
 >saf>ui>subordinate-tasking.lisp
 LEFT-ON-CANCEL-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
 >saf>ui>subordinate-tasking.lisp
 DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
 >saf>ui>subordinate-tasking.lisp
Description: None

2.2.2.3.11 (METHOD CLEAR-STATE SUBORDINATE-UNIT-TASKING)

Definition 11

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.12 (METHOD SAVE-SCROLL-STATE SUBORDINATE-UNIT-TASKING)

Definition 12

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.2.2.3.13 (METHOD DISPLAY-TASKING-TABLE SUBORDINATE-UNIT-TASKING)

Definition 13

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: DISPLAY-SUBORDINATE-TASKING-TABLE
 >saf>ui>subordinate-tasking.lisp
Called by: None
Description: None

2.2.2.3.14 (METHOD DISPLAY-TITLE SUBORDINATE-UNIT-TASKING)

Definition 14

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: *DEFAULT-BATTALION-NUMBER*
 >saf>bmi>bmi-frame.lisp
Called by: None
Description: None

2.2.2.3.15 UNIT-TASK-OVERLAY

Definition 15

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER SELECT-OVERLAY)
 No Source File Record
 (METHOD DISPLAY-OVERLAY-TASKING UNIT-TASK)
 >saf>ui>subordinate-tasking.lisp
 (METHOD COM-CHOOSE-OVERLAY-PARSER SUBORDINATE-UNIT-TASKING)
 No Source File Record
 (PROPERTY UNIT-TASK-OVERLAY DEFTYPE)
 No Source File Record
Description: None

2.2.2.3.16 UNIT-TASK-UNIT

Definition 16

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER SELECT-SUB-TASK)
No Source File Record
(METHOD DISPLAY-OVERLAY-TASKING UNIT-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD COM-CHANGE-SUB-TASK-PARSER SUBORDINATE-UNIT-TASKING)
No Source File Record
(PROPERTY UNIT-TASK-UNIT DEFTYPE)
No Source File Record
(METHOD SET-HIGHLIGHTED-PRESENTATION SUB-TASK-PANE AFTER)
>saf>ui>subordinate-tasking.lisp
Description: None

2.2.2.3.17 COMBAT-INSTRUCTION-SET

Definition 17

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (LOCATE-INSTANCE-VARIABLE (LOCF COMBAT-INSTRUCTION-SET))
CONTROL-MEASURE-BEHAVIOR
COMBAT-INSTRUCTION-SET
No Source File Record
(WRITE-INSTANCE-VARIABLE (SETF COMBAT-INSTRUCTION-SET))
CONTROL-MEASURE-BEHAVIOR
COMBAT-INSTRUCTION-SET
No Source File Record
(READ-INSTANCE-VARIABLE COMBAT-INSTRUCTION-SET CONTROL-MEASURE-BEHAVIOR COMBAT-INSTRUCTION-SET)
No Source File Record
(METHOD REVIEW-DATA ZONE)
>saf>cm>zone.lisp
(METHOD REVIEW-DATA AREA)
>saf>cm>area.lisp
(METHOD REVIEW-DATA LINE)
>saf>cm>line.lisp
(METHOD REVIEW-DATA CM-POINT)
>saf>cm>point.lisp
(METHOD COPY-BEHAVIOR LINE-BEHAVIOR)
>saf>cm>line.lisp
(METHOD SEND-BEH-INFO LINE-BEHAVIOR)
>saf>cm>line.lisp

(METHOD COPY-BEHAVIOR CM-POINT-BEHAVIOR)
>saf>cm>point.lisp
(METHOD SEND-BEH-INFO CM-POINT-BEHAVIOR)
>saf>cm>point.lisp
(METHOD SEND-CM-INFO GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(PRESENTATION-FUNCTION COMBAT-INSTRUCTION-SET PARSER)
No Source File Record
(PROPERTY COMBAT-INSTRUCTION-SET DEFTYPE)
No Source File Record
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp

Description: None

2.2.2.3.18 UNIT-TASK

Definition 18

>saf>ui>subordinate-tasking.lisp

Type: DEFOBJECT

Arguments: ()

Outputs:

Calls: STORABLE-MIXIN

>saf>objects>storable-mixin.lisp

OVERLAY

>saf>cm>overlay.lisp

OVERLAY

>saf>cm>overlay.lisp

Called by: FILTERED-SAVE-INSTANCE

>saf>sys>new-storage.lisp

SAVE-FOR-TASKING-P

>saf>sys>new-storage.lisp

(METHOD COM-CHOOSE-OVERLAY-PARSER SUBORDINATE-UNIT-TASKING)

No Source File Record

BUILD-UNIT-TASKING-STRUCTURE

>saf>ui>subordinate-tasking.lisp

Description: None

2.2.2.3.19 (METHOD MAKE-INSTANCE UNIT-TASK AFTER)

Definition 19

>saf>ui>subordinate-tasking.lisp

Type: Method

Arguments: (&REST IGNORE)

Outputs:

Calls: None

Called by: None

Description: None

2.2.2.3.20 SUB-TASK

Definition 20

>saf>ui>subordinate-tasking.lisp
Type: DEFOBJECT

Arguments: ()

Outputs:

Calls: ROUTE

>saf>cm>route.lisp
STORABLE-MIXIN
>saf>objects>storable-mixin.lisp
UNIT
>saf>cm>control-measure.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp

Called by: FILTERED-SAVE-INSTANCE

>saf>sys>new-storage.lisp

(METHOD COM-CHANGE-SUB-TASK-PARSER SUBORDINATE-UNIT-TASKING)

No Source File Record

MAKE-UNIT-LIST

>saf>ui>subordinate-tasking.lisp

Description: None

2.2.2.3.21 (METHOD MAKE-INSTANCE SUB-TASK AFTER)

Definition 21

>saf>ui>subordinate-tasking.lisp

Type: Method

Arguments: (&REST IGNORE)

Outputs:

Calls: ROUTE

>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp

Called by: None

Description: None

2.2.2.3.22 (METHOD CIS-NAME SUB-TASK)

Definition 22

>saf>ui>subordinate-tasking.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.2.3.23 (METHOD EXECUTE-SUB-TASK SUB-TASK)

Definition 23

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: (OVERLAY)
Outputs:
Calls: ROUTE
 >saf>cm>route.lisp
 EXECUTE-OVERLAY
 >saf>network>vars.lisp
 NET-MSG
 >saf>rudp>outgoing.lisp
 UNIT
 >saf>cm>control-measure.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
Called by: None
Description: None

2.2.2.3.24 (METHOD REEXECUTE-SUB-TASK SUB-TASK)

Definition 24

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: (OVERLAY)
Outputs:
Calls: ROUTE
 >saf>cm>route.lisp
 EXECUTE-OVERLAY
 >saf>network>vars.lisp
 NET-MSG
 >saf>rudp>outgoing.lisp
 UNIT
 >saf>cm>control-measure.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
Called by: None
Description: None

2.2.2.3.25 MAKE-UNIT-LIST

Definition 25

>saf>ui>subordinate-tasking.lisp
Type: Function
Arguments: (SUBS)
Outputs:

Calls: SUB-TASK
 >saf>ui>subordinate-tasking.lisp
Called by: MERGE-UNIT-TASKING
 >saf>ui>subordinate-tasking.lisp
 BUILD-UNIT-TASKING-STRUCTURE
 >saf>ui>subordinate-tasking.lisp
Description: None

2.2.2.3.26 BUILD-UNIT-TASKING-STRUCTURE

Definition 26

>saf>ui>subordinate-tasking.lisp
Type: Function
Arguments: (SUBORDINATES OVERLAYS)
Outputs:
Calls: UNIT-TASK
 >saf>ui>subordinate-tasking.lisp
 MAKE-UNIT-LIST
 >saf>ui>subordinate-tasking.lisp
Called by: MERGE-UNIT-TASKING
 >saf>ui>subordinate-tasking.lisp
Description: None

2.2.2.3.27 MERGE-UNIT-TASKING

Definition 27

>saf>ui>subordinate-tasking.lisp
Type: Function
Arguments: (TASKS SUBORDS)
Outputs:
Calls: *ALL-OVERLAYS*
 >saf>sys>vars.lisp
 MAKE-UNIT-LIST
 >saf>ui>subordinate-tasking.lisp
 BUILD-UNIT-TASKING-STRUCTURE
 >saf>ui>subordinate-tasking.lisp
 UNIT
 >saf>cm>control-measure.lisp
 OVERLAY
 >saf>cm>overlay.lisp
 OVERLAY
 >saf>cm>overlay.lisp
Called by: SUBORDINATE-TASK
 >sat>ui>subordinate-tasking.lisp
Description: None

2.2.2.3.28 (METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)

Definition 28

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: ()
Outputs:
Calls: TYPE-OR-NO-CHANGE
 >saf>sys>dw-presentation-types.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
 COMBAT-INSTRUCTION-SET
 >saf>ui>subordinate-tasking.lisp
 UNIT
 >saf>cm>control-measure.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
 OVERLAY
 >saf>cm>overlay.lisp
 OVERLAY
 >saf>cm>overlay.lisp
Called by: None
Description: None

2.2.2.3.29 (COM-CANCEL MENU-ACCELERATOR T)

Definition 29

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.30 (COM-DONE MENU-ACCELERATOR T)

Definition 30

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.2.2.3.31 (COM-WARN-OVERLAY MENU-ACCELERATOR T)
Definition 31

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.32 (COM-EXECUTE-OVERLAY MENU-ACCELERATOR T)
Definition 32

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.33 (COM-ISSUE-FRAG-ORDER MENU-ACCELERATOR T)
Definition 33

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.34 (COM-CHOOSE-OVERLAY)
Definition 34

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.35 SELECT-OVERLAY

Definition 35

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-PRESENTATION-TO-COMMAND-TRANSLATOR
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.36 (COM-CHANGE-SUB-TASK)

Definition 36

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-SUBORDINATE-UNIT-TASKING-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.37 SELECT-SUB-TASK

Definition 37

>saf>ui>subordinate-tasking.lisp
Type: DEFINE-PRESENTATION-TO-COMMAND-TRANSLATOR
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.3.38 (METHOD DISPLAY-SUB-TASKING SUB-TASK)

Definition 38

>saf>ui>subordinate-tasking.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: ROUTE
 >saf>cm>route.lisp
 UNIT
 >saf>cm>control-measure.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
Called by: None
Description: None

2.2.2.3.39 (METHOD DISPLAY-OVERLAY-TASKING UNIT-TASK)

Definition 39

>saf>ui>subordinate-tasking.lisp

Type: Method

Arguments: (STREAM)

Outputs:

Calls: OVERLAY-IS-MODIFIED

>saf>ui>subordinate-tasking.lisp

UNIT-TASK-OVERLAY

>saf>ui>subordinate-tasking.lisp

UNIT-TASK-UNIT

>saf>ui>subordinate-tasking.lisp

OVERLAY

>saf>cm>overlay.lisp

OVERLAY

>saf>cm>overlay.lisp

Called by: None

Description: None

2.2.2.3.40 DISPLAY-SUBORDINATE-TASKING-TABLE

Definition 40

>saf>ui>subordinate-tasking.lisp

Type: Function

Arguments: (STREAM OVERLAY-TASKS)

Outputs:

Calls: None

Called by: (METHOD DISPLAY-TASKING-TABLE SUBORDINATE-UNIT-TASKING)

>saf>ui>subordinate-tasking.lisp

Description: None

2.2.2.3.41 SUBORDINATE-TASK

Definition 41

>saf>ui>subordinate-tasking.lisp

Type: Function

Arguments: (UNIT)

Outputs:

Calls: *ALL-OVERLAYS*

>saf>sys>vars.lisp

LOCAL

>saf>network>vars.lisp

GET-SUBORDINATES-INSTANCES

>saf>objects>simnet-agent.lisp

TOP-LEVEL-UNITS

>saf>simnet-objects>vehicle-tracking.lisp

TOP-LEVEL-TASKING

>saf>ui>subordinate-tasking.lisp

SUBORDINATE-UNIT-TASKING
>saf>ui>subordinate-tasking.lisp
MERGE-UNIT-TASKING
>saf>ui>subordinate-tasking.lisp
SUBORDINATE-UNIT-TASKING
>saf>ui>subordinate-tasking.lisp

Called by: OPORD
>saf>ui>opord.lisp

Description: This function is the entry point into the subordinate unit tasking sequence

2.2.2.3.42 CLEAR-TOP-LEVEL-TASKING

Definition 42

>saf>ui>subordinate-tasking.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *TOP-LEVEL-TASKING*
>saf>ui>subordinate-tasking.lisp

Called by: COMPLETE-C2-RESET
>saf>network>top-level.lisp

Description: None

2.2.2.3.43 RESET-ALL-OVERLAYS-AND-TASKS

Definition 43

>saf>ui>subordinate-tasking.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *ALL-OVERLAYS*
>saf>sys>vars.lisp
ALL-LOCAL-VEHICLES
>saf>simnet-objects>vehicle-tracking.lisp
TOP-LEVEL-TASKING

>saf>ui>subordinate-tasking.lisp

Called by: COMPLETE-C2-RESET
>saf>network>top-level.lisp

EXIT-CONN

>saf>network>connection.lisp

Description: None

2.2.2.3.44 SUBORDINATE-UNIT-TASKING

Definition 44

>saf>ui>subordinate-tasking.lisp

Type: COMPILE-FLAVOR-METHODS

Arguments: ()

Outputs:

Calls: None

Called by: LEFT-ON-EXECUTE OVERLAY-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
>saf>patch>saf-6>saf-6-3.lisp
SUBORDINATE-TASK
>saf>ui>subordinate-tasking.lisp
LEFT-ON-ISSUE FRAG ORDER-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
>saf>ui>subordinate-tasking.lisp
LEFT-ON-WARN OVERLAY-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
>saf>ui>subordinate-tasking.lisp
LEFT-ON-DONE-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
>saf>ui>subordinate-tasking.lisp
LEFT-ON-CANCEL-AT-TOP-LEVEL-SUBORDINATE-UNIT-TASKING-MENU-COMMAND
>saf>ui>subordinate-tasking.lisp

Description: None

2.2.2.4 CSU cm>overlay.lisp

This unit contains the definition of the overlay structure, as well as the routines to add, delete and display control measures. It also includes an overlay method called *send-overlay-to-simhost*, that sends control measure information to the Simhost.

2.2.2.4.1 OVERLAY

Definition 1

>saf>cm>overlay.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF OVERLAY) UNIT-TASK
OVERLAY)
No Source File Record
(READ-INSTANCE-VARIABLE OVERLAY UNIT-TASK OVERLAY)
No Source File Record
(WRITE-INSTANCE-VARIABLE (SETF OVERLAY) SIMNET-AGENT
OVERLAY)
No Source File Record
(READ-INSTANCE-VARIABLE OVERLAY SIMNET-AGENT OVERLAY)
No Source File Record
COPY-RELEVANT-IVS
>saf>sys>new-storage.lisp
CLEAR-OVERLAYS
>saf>ui>mouse-interface.lisp
(METHOD DISPLAY-OVERLAY-TASKING UNIT-TASK)
>saf>ui>subordinate-tasking.lisp

(METHOD COM-EXECUTE-OVERLAY-INTERNAL SUBORDINATE-UNIT-TASKING)

No Source File Record

(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)

>saf>ui>subordinate-tasking.lisp

COPY-RELEVANT-IVS

>saf>sys>new-storage.lisp

(METHOD COM-ISSUE-FRAG-ORDER-INTERNAL SUBORDINATE-UNIT-TASKING)

No Source File Record

(METHOD COM-WARN-OVERLAY-INTERNAL SUBORDINATE-UNIT-TASKING)

No Source File Record

MERGE-UNIT-TASKING

>saf>ui>subordinate-tasking.lisp

COPY-RELEVANT-IVS

>saf>sys>new-storage.lisp

LOAD-SCENARIO

>saf>sys>new-storage.lisp

LOAD-OVERLAY

>saf>sys>new-storage.lisp

MAKE-OVERLAY

>saf>cm>overlay.lisp

OVERLAY?

>saf>cm>overlay.lisp

UNIT-TASK

>saf>ui>subordinate-tasking.lisp

SIMNET-AGENT

>saf>objects>simnet-agent.lisp

Description: None

2.2.2.4.2 OVERLAY?

Definition 2

>saf>cm>overlay.lisp

Type: Function

Arguments: (OVERLAY)

Outputs:

Calls: OVERLAY

>saf>cm>overlay.lisp

OVERLAY

>saf>cm>overlay.lisp

Called by: None

Description: None

2.2.2.4.3 (METHOD MAKE-INSTANCE OVERLAY AFTER)

Definition 3

>saf>cm>overlay.lisp

Type: Method

Arguments: (&REST INIT-ARGS)

Outputs:

Calls: *CONTROL-MEASURE-ID*
>saf>cm>control-measure.lisp
UNIQUE-CM-ID
>saf>cm>control-measure.lisp

Called by: None
Description: None

2.2.2.4.4 (METHOD KILL OVERLAY)

Definition 4

>saf>cm>overlay.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *PVD-DISPLAY*
>saf>sys>vars.lisp
ALL-OVERLAYS
>saf>sys>vars.lisp
Called by: None
Description: None

2.2.2.4.5 (METHOD PRINT-SELF OVERLAY)

Definition 5

>saf>cm>overlay.lisp
Type: Method
Arguments: (STREAM PRINT-DEPTH SLASHIFY-P)
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.4.6 (METHOD REVIEW-DATA OVERLAY)

Definition 6

>saf>cm>overlay.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.4.7 (METHOD REFRESH OVERLAY)

Definition 7

>saf>cm>overlay.lisp
Type: Method
Arguments: (STREAM)
Outputs:

Calls: None
Called by: None
Description: None

2.2.2.4.8 (METHOD DRAW OVERLAY)

Definition 8

>saf>cm>overlay.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.4.9 (METHOD ERASE OVERLAY)

Definition 9

>saf>cm>overlay.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.4.10 (METHOD ADD-NEW-CONTROL-MEASURE OVERLAY)

Definition 10

>saf>cm>overlay.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *PVD-DISPLAY*
 >saf>sys>vars.lisp
 MENU-CHOOSE
 >saf>sys>utilities.lisp
 MAKE-ROUTE
 >saf>cm>route.lisp
 MAKE-POINT
 >saf>cm>point.lisp
 MAKE-LINE
 >saf>cm>line.lisp
 MAKE-AREA
 >saf>cm>area.lisp
 MAKE-ZONE
 >saf>cm>zone.lisp
Called by: None
Description: None

2.2.2.4.11 (METHOD ADD-CONTROL-MEASURE OVERLAY)

Definition 11

>saf>cm>overlay.lisp
Type: Method
Arguments: (CM BEH)
Outputs:
Calls: *PVD-DISPLAY*
 >saf>sys>vars.lisp
Called by: None
Description: None

2.2.2.4.12 (METHOD DELETE-CONTROL-MEASURE OVERLAY)

Definition 12

>saf>cm>overlay.lisp
Type: Method
Arguments: (CM)
Outputs:
Calls: *PVD-DISPLAY*
 >saf>sys>vars.lisp
Called by: None
Description: None

2.2.2.4.13 (METHOD DELETE-ALL-CONTROL-MEASURES OVERLAY)

Definition 13

>saf>cm>overlay.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.2.4.14 *CM-DELETE-MENU*

Definition 14

>saf>cm>overlay.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: GET-DELETE-CM-MENU
 >saf>cm>overlay.lisp
Description: None

2.2.2.4.15 *CM-DELETE-MENU-COLOR*

Definition 15

>saf>cm>overlay.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: GET-DELETE-CM-MENU
>saf>cm>overlay.lisp
Description: None

2.2.2.4.16 GET-DELETE-CM-MENU

Definition 16

>saf>cm>overlay.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *CM-DELETE-MENU*
>saf>cm>overlay.lisp
CM-DELETE-MENU-COLOR
>saf>cm>overlay.lisp
Called by: MULTIPLE-MENU-DELETE-CMS
>saf>cm>overlay.lisp
Description: None

2.2.2.4.17 MULTIPLE-MENU-DELETE-CMS

Definition 17

>saf>cm>overlay.lisp
Type: Function
Arguments: (CHOICE-LIST)
Outputs:
Calls: GET-DELETE-CM-MENU
>saf>cm>overlay.lisp
Called by: (METHOD DELETE-SOME-CONTROL-MEASURES OVERLAY)
>saf>cm>overlay.lisp
Description: None

**2.2.2.4.18 (METHOD DELETE-SOME-CONTROL-MEASURES
OVERLAY)**

Definition 18

>saf>cm>overlay.lisp
Type: Method
Arguments: ()

Outputs:

Calls: MULTIPLE-MENU-DELETE-CMS
>saf>cm>overlay.lisp

Called by: None

Description: None

2.2.2.4.19 (METHOD SEND-OVERLAY-TO-SIMHOST OVERLAY)

Definition 19

>saf>cm>overlay.lisp

Type: Method

Arguments: (UNIT-ID &KEY FRAGO FORCE)

Outputs:

Calls: POINT

>saf>interface>model-menu.lisp

DELETE-CM

>saf>network>vars.lisp

NET-MSG

>saf>rudp>outgoing.lisp

CM-POINT

>saf>cm>point.lisp

CM-POINT

>saf>cm>point.lisp

CM-POINT

>saf>cm>point.lisp

POINT

>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.2.4.20 (METHOD CM-NEEDS-UPDATING OVERLAY)

Definition 20

>saf>cm>overlay.lisp

Type: Method

Arguments: (CM)

Outputs:

Calls: None

Called by: None

Description: None

2.2.2.4.21 (METHOD ALL-ROUTES OVERLAY)

Definition 21

>saf>cm>overlay.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.2.4.22 (METHOD OVERLAY-OPS OVERLAY)

Definition 22

>saf>cm>overlay.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *PVD-DISPLAY*
>saf>sys>vars.lisp
MENU-CHOOSE
>saf>sys>utilities.lisp
Called by: None
Description: None

2.2.2.4.23 OVERLAY

Definition 23

>saf>cm>overlay.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF OVERLAY) UNIT-TASK
OVERLAY)
No Source File Record
(READ-INSTANCE-VARIABLE OVERLAY UNIT-TASK OVERLAY)
No Source File Record
(WRITE-INSTANCE-VARIABLE (SETF OVERLAY) SIMNET-AGENT
OVERLAY)
No Source File Record
(READ-INSTANCE-VARIABLE OVERLAY SIMNET-AGENT OVERLAY)
No Source File Record
COPY-RELEVANT-IVS
>saf>sys>new-storage.lisp
CLEAR-OVERLAYS
>saf>ui>mouse-interface.lisp
(METHOD DISPLAY-OVERLAY-TASKING UNIT-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD COM-EXECUTE-OVERLAY-INTERNAL SUBORDINATE-UNIT-
TASKING)
No Source File Record
(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)
>saf>ui>subordinate-tasking.lisp
COPY-RELEVANT-IVS
>saf>sys>new-storage.lisp
(METHOD COM-ISSUE-FRAG-ORDER-INTERNAL SUBORDINATE-UNIT-
TASKING)
No Source File Record
(METHOD COM-WARN-OVERLAY-INTERNAL SUBORDINATE-UNIT-
TASKING)
No Source File Record
MERGE-UNIT-TASKING
>saf>ui>subordinate-tasking.lisp

COPY-RELEVANT-IVS
>saf>sys>new-storage.lisp
LOAD-SCENARIO
>saf>sys>new-storage.lisp
LOAD-OVERLAY
>saf>sys>new-storage.lisp
MAKE-OVERLAY
>saf>cm>overlay.lisp
OVERLAY?
>saf>cm>overlay.lisp
UNIT-TASK
>saf>ui>subordinate-tasking.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp

Description: None

2.2.2.4.24 MAKE-OVERLAY

Definition 24

>saf>cm>overlay.lisp
Type: Function
Arguments: (&OPTIONAL NAME)
Outputs:
Calls: NAME
 >saf>sysdcl.lisp
 PVD-DISPLAY
 >saf>sys>vars.lisp
 ALL-OVERLAYS
 >saf>sys>vars.lisp
 OVERLAY
 >saf>cm>overlay.lisp
 OVERLAY
 >saf>cm>overlay.lisp
Called by: CHOOSE-AN-OVERLAY
 >saf>cm>overlay.lisp
 CHOOSE-AN-OVERLAY
 >saf>cm>overlay.lisp
Description: None

2.2.2.4.25 REDRAW-OVERLAYS

Definition 25

>saf>cm>overlay.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *PVD-DISPLAY*
 >saf>sys>vars.lisp
 ALL-OVERLAYS
 >saf>sys>vars.lisp

Called by: DRAW-MAP
>saf>sys>update-process.lisp
Description: None

2.2.2.4.26 CHOOSE-AN-OVERLAY

Definition 26

>saf>cm>overlay.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *ALL-OVERLAYS*
 >saf>sys>vars.lisp
 MENU-CHOOSE
 >saf>sys>utilities.lisp
 MAKE-OVERLAY
 >saf>cm>overlay.lisp
 MAKE-OVERLAY
 >saf>cm>overlay.lisp
Called by: (METHOD COM-SELECT-SUBPARAGRAPH-INTERNAL SAF)
 No Source File Record
Description: None

2.2.2.4.27 SORT-CMS

Definition 27

>saf>cm>overlay.lisp
Type: Function
Arguments: (POINT CM-LIST)
Outputs:
Calls: DISTANCE
 >map>utilities.lisp
 POINT
 >saf>interface>model-menu.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.3 Control Measures CSC

This CSC contains the code to create and manipulate graphical control measures on the color map display. These control measures include points, lines, areas, and zones.

The CSUs in this CSC are:

```
cm>control-measure.lisp csu
cm>control-measure-point.lisp csu
cm>point.lisp csu
cm>line.lisp csu
cm>generic-area.lisp csu
cm>area.lisp csu
cm>zone.lisp csu
```

2.2.3.1 CSU cm>control-measure.lisp

This unit contains the definition of the basic control measure structure, as well as the routines to manipulate them. Presentation types that make control measures mouse-sensitive are also included.

After control measures are created as geometrical objects on the Symbolics, they are sent to the Simhost. It is the Simhost which detects when a unit has "triggered" a control measure, and carries out the associated control-measure-behavior. This explains why there is no code on the Symbolics for detecting when a unit has triggered a control measure.

Each of the control measure types, described below -- route, cm-point, line, zone, and area -- have a similar set of related structures. These include an associated behavior object (e.g., the behavior object for *line* is called *line-behavior*, etc.), which will be a subclass of the *control-measure-behavior class*. (see the object hierarchy table in CSU objects>defobject.lisp, section 2.5.2) Each control measure also has a *make-behavior* method that creates a behavior instance for it, a *review-data* method that allows the user to modify the control-measure from a menu, and a *cm-intersection* method that can be used to determine if the control measure intersects a given line. All control measures except the point control measure have associated paths composed of multiple line segments. These can be edited using methods like move-point, delete-point, insert-point-after, and insert-point-before. The *orthogonalize* method takes a list of points and puts all the x coordinates in one list and all the y coordinates in another, for use in a message to the Simhost.

2.2.3.1.1 *CONTROL-MEASURE-ID*

Definition 1

```
>saf>cm>control-measure.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD MAKE-INSTANCE OVERLAY AFTER)
          >saf>cm>overlay.lisp
          (METHOD MAKE-INSTANCE CONTROL-MEASURE-POINT AFTER)
          >saf>cm>control-measure-point.lisp
          (METHOD MAKE-INSTANCE CONTROL-MEASURE AFTER)
          >saf>cm>control-measure.lisp
          UNIQUE-CM-ID
          >saf>cm>control-measure.lisp
Description: None
```

2.2.3.1.2 UNIQUE-CM-ID

Definition 2

>saf>cm>control-measure.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CONTROL-MEASURE-ID*
 >saf>cm>control-measure.lisp
Called by: (METHOD MAKE-INSTANCE OVERLAY AFTER)
 >saf>cm>overlay.lisp
 (METHOD MAKE-INSTANCE CONTROL-MEASURE-POINT AFTER)
 >saf>cm>control-measure-point.lisp
 (METHOD MAKE-INSTANCE CONTROL-MEASURE AFTER)
 >saf>cm>control-measure.lisp
Description: None

2.2.3.1.3 'CONTROL-MEASURE

Definition 3

>saf>cm>control-measure.lisp
Type: SHADOW
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.1.4 CONTROL-MEASURE

Definition 4

>saf>cm>control-measure.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF CONTROL-MEASURE)
 CONTROL-MEASURE-POINT CONTROL-MEASURE)
 No Source File Record
 (READ-INSTANCE-VARIABLE CONTROL-MEASURE CONTROL-
MEASURE-POINT CONTROL-MEASURE)
 No Source File Record
 (LOCATE-INSTANCE-VARIABLE (LOCF CONTROL-MEASURE) CONTROL-
MEASURE-BEHAVIOR CONTROL-MEASURE)
 No Source File Record
 (WRITE-INSTANCE-VARIABLE (SETF CONTROL-MEASURE) CONTROL-
MEASURE-BEHAVIOR CONTROL-MEASURE)
 No Source File Record
 (READ-INSTANCE-VARIABLE CONTROL-MEASURE CONTROL-
MEASURE-BEHAVIOR CONTROL-MEASURE)
 No Source File Record
 GENERIC-AREA

```
>saf>cm>generic-area.lisp
ZONE
>saf>cm>zone.lisp
AREA
>saf>cm>area.lisp
LINE
>saf>cm>line.lisp
CM-POINT
>saf>cm>point.lisp
ROUTE
>saf>cm>route.lisp
(METHOD COPY ZONE)
>saf>cm>zone.lisp
(METHOD COPY AREA)
>saf>cm>area.lisp
(METHOD INITIALIZE-POINTS GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD COPY LINE)
>saf>cm>line.lisp
(METHOD INITIALIZE-POINTS LINE)
>saf>cm>line.lisp
(METHOD COPY ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD INITIALIZE-POINTS ROUTE)
>saf>cm>route.lisp
(METHOD PRINT-SELF CONTROL-MEASURE-BEHAVIOR)
>saf>cm>control-measure.lisp
(PRESENTATION-MOUSE-HANDLER CONTROL-MEASURE-GESTURE)
No Source File Record
CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp
```

Description: None

2.2.3.1.5 (METHOD MAKE-INSTANCE CONTROL-MEASURE AFTER)

Definition 5

>saf>cm>control-measure.lisp
Type: Method
Arguments: (&REST INIT-ARGS)
Outputs:
Calls: *CONTROL-MEASURE-ID*
>saf>cm>control-measure.lisp
UNIQUE-CM-ID
>saf>cm>control-measure.lisp
Called by: None
Description: None

2.2.3.1.6 (METHOD PRINT-SELF CONTROL-MEASURE)**Definition 6**

>saf>cm>control-measure.lisp

Type: Method

Arguments: (STREAM PRINT-DEPTH SLASHIFY-P)

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.1.7 (METHOD REFRESH CONTROL-MEASURE)**Definition 7**

>saf>cm>control-measure.lisp

Type: Method

Arguments: (STREAM)

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.1.8 (METHOD ROUTEP CONTROL-MEASURE)**Definition 8**

>saf>cm>control-measure.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.1.9 (DRAW CONTROL-MEASURE)**Definition 9**

>saf>cm>control-measure.lisp

Type: DEFWHOPPER

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.1.10 (ERASE CONTROL-MEASURE)**Definition 10**

>saf>cm>control-measure.lisp

Type: DEFWHOPPER

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.1.11 (METHOD DRAW-NAME CONTROL-MEASURE)

Definition 11

>saf>cm>control-measure.lisp

Type: Method

Arguments: (STREAM ALU)

Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE

>map>utilities.lisp

WITH-MAP-Graphics

>map>utilities.lisp

CONTROL-MEASURE-LABEL

>saf>cm>control-measure.lisp

Called by: None

Description: None

2.2.3.1.12 (METHOD ERASE-NAME CONTROL-MEASURE)

Definition 12

>saf>cm>control-measure.lisp

Type: Method

Arguments: (STREAM ALU)

Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE

>map>utilities.lisp

WITH-MAP-Graphics

>map>utilities.lisp

WITH-FAST-MAP-Graphics

>map>utilities.lisp

DELETE-DISPLAYED-PRESENTATION

>saf>sys>utilities.lisp

Called by: None

Description: None

2.2.3.1.13 (REVIEW-DATA CONTROL-MEASURE)

Definition 13

>saf>cm>control-measure.lisp

Type: DEFWHOPPER

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.1.14 (MOVE-POINT CONTROL-MEASURE)

Definition 14

>saf>cm>control-measure.lisp
Type: DEFWHOPPER
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.1.15 (DELETE-POINT CONTROL-MEASURE)

Definition 15

>saf>cm>control-measure.lisp
Type: DEFWHOPPER
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.1.16 (INSERT-POINT-AFTER CONTROL-MEASURE)

Definition 16

>saf>cm>control-measure.lisp
Type: DEFWHOPPER
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.1.17 (INSERT-POINT-BEFORE CONTROL-MEASURE)

Definition 17

>saf>cm>control-measure.lisp
Type: DEFWHOPPER
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.1.18 (METHOD ADD-CM-TO-OVERLAY CONTROL-MEASURE)

Definition 18

>saf>cm>control-measure.lisp
Type: Method
Arguments: (OVERLAY &OPTIONAL OLD-BEHAVIOR)
Outputs:

Calls: None
Called by: None
Description: None

2.2.3.1.19 CONTROL-MEASURE-BEHAVIOR

Definition 19

>saf>cm>control-measure.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: CHANGE-SPEED
 >saf>network>vars.lisp
 STORABLE-MIXIN
 >saf>objects>storable-mixin.lisp
 COMBAT-INSTRUCTION-SET
 >saf>ui>subordinate-tasking.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
Called by: ZONE-BEHAVIOR
 >saf>cm>zone.lisp
 AREA-BEHAVIOR
 >saf>cm>area.lisp
 LINE-BEHAVIOR
 >saf>cm>line.lisp
 CM-POINT-BEHAVIOR
 >saf>cm>point.lisp
 ROUTE-BEHAVIOR
 >saf>cm>route.lisp
 FILTERED-SAVE-INSTANCE
 >saf>sys>new-storage.lisp
Description: None

2.2.3.1.20 (METHOD PRINT-SELF CONTROL-MEASURE-BEHAVIOR)

Definition 20

>saf>cm>control-measure.lisp
Type: Method
Arguments: (STREAM PRINT-DEPTH SLASHIFY-P)
Outputs:
Calls: CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
Called by: None
Description: None

2.2.3.1.21 CONTROL-MEASURE

Definition 21

>saf>cm>control-measure.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF CONTROL-MEASURE)
CONTROL-MEASURE-POINT CONTROL-MEASURE)
No Source File Record
(READ-INSTANCE-VARIABLE CONTROL-MEASURE CONTROL-
MEASURE-POINT CONTROL-MEASURE)
No Source File Record
(LOCATE-INSTANCE-VARIABLE (LOCF CONTROL-MEASURE) CONTROL-
MEASURE-BEHAVIOR CONTROL-MEASURE)
No Source File Record
(WRITE-INSTANCE-VARIABLE (SETF CONTROL-MEASURE) CONTROL-
MEASURE-BEHAVIOR CONTROL-MEASURE)
No Source File Record
(READ-INSTANCE-VARIABLE CONTROL-MEASURE CONTROL-
MEASURE-BEHAVIOR CONTROL-MEASURE)
No Source File Record
GENERIC-AREA
>saf>cm>generic-area.lisp
ZONE
>saf>cm>zone.lisp
AREA
>saf>cm>area.lisp
LINE
>saf>cm>line.lisp
CM-POINT
>saf>cm>point.lisp
ROUTE
>saf>cm>route.lisp
(METHOD COPY ZONE)
>saf>cm>zone.lisp
(METHOD COPY AREA)
>saf>cm>area.lisp
(METHOD INITIALIZE-POINTS GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD COPY LINE)
>saf>cm>line.lisp
(METHOD INITIALIZE-POINTS LINE)
>saf>cm>line.lisp
(METHOD COPY ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp

(METHOD INITIALIZE-POINTS ROUTE)
>saf>cm>route.lisp
(METHOD PRINT-SELF CONTROL-MEASURE-BEHAVIOR)
>saf>cm>control-measure.lisp
(PRESENTATION-MOUSE-HANDLER CONTROL-MEASURE-GESTURE)
No Source File Record
CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp
Description: None

2.2.3.1.22 REVERSE-XY

Definition 22

>saf>cm>control-measure.lisp
Type: Function
Arguments: (LIST)
Outputs:
Calls: None
Called by: MAKE-ZONE
>saf>cm>zone.lisp
MAKE-AREA
>saf>cm>area.lisp
MAKE-LINE
>saf>cm>line.lisp
MAKE-ROUTE
>saf>cm>route.lisp
FIND-RIVER-BEND-POINTS
>saf>cm>water-avoidance.lisp
CROSSING-LOCATION
>saf>cm>water-avoidance.lisp
ALIGN-POINTS
>saf>cm>water-avoidance.lisp
FIND-RIVER-POINTS
>saf>cm>water-avoidance.lisp
FIND-SEGMENT-CROSS-POINTS
>saf>cm>water-avoidance.lisp
INTERSECTION-DIRECTION
>saf>cm>water-avoidance.lisp
EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
GET-BRIDGE-POINTS
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE-CORE
>saf>cm>road-routes.lisp
EXPAND-ROUTE-INTO-POINTS
>saf>cm>route-finder.lisp
Description: None

2.2.3.1.23 UNIT

Definition 23

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF UNIT) SUB-TASK UNIT)
No Source File Record
(READ-INSTANCE-VARIABLE UNIT SUB-TASK UNIT)
No Source File Record
(WRITE-INSTANCE-VARIABLE (SETF UNIT) OVERLAY UNIT)
No Source File Record
(READ-INSTANCE-VARIABLE UNIT OVERLAY UNIT)
No Source File Record
COPY-RELEVANT-IVS
>saf>sys>new-storage.lisp
(METHOD REEXECUTE-SUB-TASK SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD DISPLAY-SUB-TASKING SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD EXECUTE-SUB-TASK SUB-TASK)
>saf>ui>subordinate-tasking.lisp
SAVE-FOR-TASKING-P
>saf>sys>new-storage.lisp
MERGE-UNIT-TASKING
>saf>ui>subordinate-tasking.lisp
(METHOD SET-HIGHLIGHTED-PRESENTATION SUB-TASK-PANE AFTER)
>saf>ui>subordinate-tasking.lisp
CLEAR-OVERLAYS
>saf>ui>mouse-interface.lisp
(COMMAND-PARSER-FUNCTION COM-UNIT-OPS)
No Source File Record
(PRESENTATION-FUNCTION CM-FORMATION DATA-TYPE-EQUIVALENT-STACK)
No Source File Record
(PRESENTATION-FUNCTION CM-FORMATION DATA-TYPE-EQUIVALENT)
No Source File Record
(PRESENTATION-FUNCTION FORMATION DATA-TYPE-EQUIVALENT-STACK)
No Source File Record
(PRESENTATION-FUNCTION FORMATION DATA-TYPE-EQUIVALENT)
No Source File Record
(PRESENTATION-FUNCTION LOCAL-UNIT DATA-TYPE-EQUIVALENT-STACK)
No Source File Record
(PRESENTATION-FUNCTION LOCAL-UNIT DATA-TYPE-EQUIVALENT)
No Source File Record

(PRESENTATION-FUNCTION UNIT PRINTER)
No Source File Record
(PRESENTATION-FUNCTION UNIT PARSER)
No Source File Record
(PROPERTY UNIT DEFTYPE)
No Source File Record
SUB-TASK
>saf>ui>subordinate-tasking.lisp
OVERLAY
>saf>cm>overlay.lisp
Description: None

2.2.3.1.24 LOCAL-UNIT

Definition 24

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PROPERTY LOCAL-UNIT DEFTYPE)
No Source File Record
Description: None

2.2.3.1.25 *PREV-UNITS*

Definition 25

>saf>cm>control-measure.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD REVIEW-DATA ZONE)
>saf>cm>zone.lisp
(METHOD REVIEW-DATA AREA)
>saf>cm>area.lisp
(METHOD REVIEW-DATA LINE)
>saf>cm>line.lisp
(METHOD REVIEW-DATA CM-POINT)
>saf>cm>point.lisp
Description: None

2.2.3.1.26 *APPLIES-TO-UNIT-MENU*

Definition 26

>saf>cm>control-measure.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None

Called by: MULTIPLE-MENU-CHOOSE-UNITS
>saf>cm>control-measure.lisp
MAKE-APPLIES-TO-UNIT-MENU
>saf>cm>control-measure.lisp
MAKE-APPLIES-TO-UNIT-MENU
>saf>cm>control-measure.lisp

Description: None

2.2.3.1.27 MAKE-APPLIES-TO-UNIT-MENU

Definition 27

>saf>cm>control-measure.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *APPLIES-TO-UNIT-MENU*
>saf>cm>control-measure.lisp
APPLIES-TO-UNIT-MENU
>saf>cm>control-measure.lisp
Called by: MULTIPLE-MENU-CHOOSE-UNITS
>saf>cm>control-measure.lisp
Description: None

2.2.3.1.28 MULTIPLE-MENU-CHOOSE-UNITS

Definition 28

>saf>cm>control-measure.lisp
Type: Function
Arguments: (CHOICE-LIST CHOSEN-LIST &OPTIONAL
(LABEL '(STRING Assign Control Measure to Units STYLE (SAF MENU
NORMAL))))
Outputs:
Calls: *APPLIES-TO-UNIT-MENU*
>saf>cm>control-measure.lisp
MAKE-APPLIES-TO-UNIT-MENU
>saf>cm>control-measure.lisp
Called by: CHOOSE-UNITS-FOR-CM
>saf>cm>control-measure.lisp
Description: pops up menu and collects unit choices from it

2.2.3.1.29 CHOOSE-UNITS-FOR-CM

Definition 29

>saf>cm>control-measure.lisp
Type: Function
Arguments: (PREV-UNITS-LOCATIVE)
Outputs:

Calls: *OPFOR-IO*
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
COMPOSITE-OBJECT
>saf>objects>composite-object.lisp
COMPOSITE-OBJECT
>saf>objects>composite-object.lisp
ALL-LOCAL-VEHICLES
>saf>simnet-objects>vehicle-tracking.lisp
MULTIPLE-MENU-CHOOSE-UNITS
>saf>cm>control-measure.lisp

Called by: (PRESENTATION-FUNCTION CM-UNIT PARSER)

No Source File Record

Description: None

2.2.3.1.30 CM-UNIT

Definition 30

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD REVIEW-DATA ZONE)
>saf>cm>zone.lisp
(METHOD REVIEW-DATA AREA)
>saf>cm>area.lisp
(METHOD REVIEW-DATA LINE)
>saf>cm>line.lisp
(METHOD REVIEW-DATA CM-POINT)
>saf>cm>point.lisp
(PRESENTATION-FUNCTION CM-UNIT PRINTER)
No Source File Record
(PRESENTATION-FUNCTION CM-UNIT PARSER)
No Source File Record
(PROPERTY CM-UNIT DEFTYPE)
No Source File Record
Description: None

2.2.3.1.31 REMOVE-UNIT-POINTERS-IN-BEHAVIORS

Definition 31

>saf>cm>control-measure.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *ALL-OVERLAYS*
>saf>sys>vars.lisp
Called by: COMPLETE-C2-RESET
>saf>network>top-level.lisp
Description: None

2.2.3.1.32 FORMATION

Definition 32

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE SET-FORMATION FORMATION-OBJECT FORMATION)
No Source File Record
(WRITE-INSTANCE-VARIABLE (SETF .FORMATION) FORMATION-OBJECT FORMATION)
No Source File Record
(READ-INSTANCE-VARIABLE FORMATION FORMATION-OBJECT FORMATION)
No Source File Record
(READ-INSTANCE-VARIABLE .FORMATION FORMATION-OBJECT FORMATION)
No Source File Record
(WRITE-INSTANCE-VARIABLE (SETF FORMATION) SIMNET-AGENT FORMATION)
No Source File Record
(READ-INSTANCE-VARIABLE FORMATION SIMNET-AGENT FORMATION)
No Source File Record
MAKE-AGENT
>saf>simnet-objects>vehicle-tracking.lisp
(METHOD INTERVENE SIMNET-AGENT FORMATION)
>saf>objects>intervention.lisp
FIND-FORMATION-INFO
>saf>sandbox>sandbox.lisp
(PRESENTATION-FUNCTION CM-FORMATION DATA-TYPE-EQUIVALENT-STACK)
No Source File Record
(PRESENTATION-FUNCTION CM-FORMATION DATA-TYPE-EQUIVALENT)
No Source File Record
(PRESENTATION-FUNCTION FORMATION DATA-TYPE-EQUIVALENT-STACK)
No Source File Record
(PRESENTATION-FUNCTION FORMATION DATA-TYPE-EQUIVALENT)
No Source File Record
(PROPERTY FORMATION DEFTYPE)
No Source File Record
(METHOD INTERVENE SIMNET-AGENT FORMATION)
>saf>objects>intervention.lisp
FORMATION-OBJECT
>saf>interface>formations.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
Description: None

2.2.3.1.33 CM-FORMATION

Definition 33

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-FUNCTION CM-FORMATION DATA-TYPE-EQUIVALENT-STACK)
 No Source File Record
 (PRESENTATION-FUNCTION CM-FORMATION DATA-TYPE-EQUIVALENT)
 No Source File Record
 (PROPERTY CM-FORMATION DEFTYPE)
 No Source File Record
Description: None

2.2.3.1.34 CIS-FOR-CM

Definition 34

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-FUNCTION CM-CIS DATA-TYPE-EQUIVALENT-STACK)
 No Source File Record
 (PRESENTATION-FUNCTION CM-CIS DATA-TYPE-EQUIVALENT)
 No Source File Record
 (PRESENTATION-FUNCTION CIS-FOR-CM PARSER)
 No Source File Record
 (PROPERTY CIS-FOR-CM DEFTYPE)
 No Source File Record
Description: None

2.2.3.1.35 CM-CIS

Definition 35

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD REVIEW-DATA ZONE)
 >saf>cm>zone.lisp
 (METHOD REVIEW-DATA AREA)
 >saf>cm>area.lisp
 (METHOD REVIEW-DATA LINE)
 >saf>cm>line.lisp
 (METHOD REVIEW-DATA CM-POINT)

>saf>cm>point.lisp
(PRESENTATION-FUNCTION CM-CIS DATA-TYPE-EQUIVALENT-STACK)
No Source File Record
(PRESENTATION-FUNCTION CM-CIS DATA-TYPE-EQUIVALENT)
No Source File Record
(PROPERTY CM-CIS DEFTYPE)
No Source File Record

Description: None

2.2.3.1.36 CM-SPEED

Definition 36

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PROPERTY CM-SPEED DEFTYPE)
No Source File Record
(METHOD REVIEW-DATA LINE)
>saf>cm>line.lisp
(METHOD REVIEW-DATA CM-POINT)
>saf>cm>point.lisp

Description: None

2.2.3.1.37 WORLD-COORDS

Definition 37

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PROPERTY WORLD-COORDS DEFTYPE)
No Source File Record
(METHOD INTERVENE SIMNET-AGENT ATTACK)
>saf>objects>intervention.lisp
(METHOD INTERVENE SIMNET-AGENT LAND)
>saf>objects>intervention.lisp
(METHOD INTERVENE SIMNET-AGENT GO-TO-LOCATION)
>saf>objects>intervention.lisp
(METHOD SPECIFY-RULES-OF-ENGAGEMENT GUNNER)
>saf>objects>gunner.lisp

Description: None

2.2.3.1.38 CONTROL-MEASURE-LABEL

Definition 38

>saf>cm>control-measure.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()

Outputs:

Calls: None

Called by: (PRESENTATION-MOUSE-HANDLER CONTROL-MEASURE-LABEL-GESTURE)

No Source File Record

(METHOD DRAW CM-POINT)

>saf>cm>point.lisp

(PROPERTY CONTROL-MEASURE-LABEL DEFTYPE)

No Source File Record

(METHOD DRAW-NAME CONTROL-MEASURE)

>saf>cm>control-measure.lisp

Description: None

2.2.3.1.39 CONTROL-MEASURE-LABEL-GESTURE

Definition 39

>saf>cm>control-measure.lisp

Type: DEFINE-PRESENTATION-ACTION

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.2 CSU cm>control-measure-point.lisp

This unit contains the definition of the control measure vertex points, which are the mouse-sensitive points that make up the control measures. It also contains the routines to manipulate and display these points. Their object class is called *control-measure-point*. Methods for this class allow creation, display, display as the first point, and erasure. The presentation for control-measure-points defines a menu of operations for moving, deleting, and inserting points. A utility is also included that takes a list of numbers, breaks them up into (x, y) coordinate pairs, and makes control-measure-points at those locations.

2.2.3.2.1 CONTROL-MEASURE-POINT

Definition 1

>saf>cm>control-measure-point.lisp

Type: DEFOBJECT

Arguments: ()

Outputs:

Calls: None

Called by: ROUTE-POINT

>saf>cm>route-point.lisp

(PRESENTATION-MOUSE-HANDLER CONTROL-MEASURE-GESTURE)

No Source File Record

XY-LIST-TO-POINTS

>saf>cm>control-measure-point.lisp

(METHOD COPY CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD (SETF BOX-SIZE) CONTROL-MEASURE-POINT)
No Source File Record
(METHOD BOX-SIZE CONTROL-MEASURE-POINT)
No Source File Record

Description: None

2.2.3.2.2 (METHOD MAKE-INSTANCE CONTROL-MEASURE-POINT AFTER)

Definition 2

>saf>cm>control-measure-point.lisp
Type: Method
Arguments: (&REST INIT-ARGS)
Outputs:
Calls: *CONTROL-MEASURE-ID*
 >saf>cm>control-measure.lisp
 UNIQUE-CM-ID
 >saf>cm>control-measure.lisp
Called by: None
Description: None

2.2.3.2.3 (METHOD PAINT CONTROL-MEASURE-POINT)

Definition 3

>saf>cm>control-measure-point.lisp
Type: Method
Arguments: (STREAM ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-Graphics
 >map>utilities.lisp
Called by: None
Description: None

2.2.3.2.4 (METHOD DRAW-AS-FIRST-POINT CONTROL-MEASURE-POINT)

Definition 4

>saf>cm>control-measure-point.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-Graphics
 >map>utilities.lisp

WITH-FAST-MAP-Graphics
>map>utilities.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp

Called by: None
Description: None

2.2.3.2.5 (METHOD DRAW CONTROL-MEASURE-POINT)

Definition 5

>saf>cm>control-measure-point.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: *OVERLAY-ALU*
>map>color-map.lisp

Called by: None
Description: None

2.2.3.2.6 (METHOD ERASE CONTROL-MEASURE-POINT)

Definition 6

>saf>cm>control-measure-point.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: *ERASE-OVERLAY-ALU*
>map>color-map.lisp
DELETE-DISPLAYED-PRESENTATION
>saf>sys>utilities.lisp

Called by: None
Description: None

2.2.3.2.7 (METHOD COPY CONTROL-MEASURE-POINT)

Definition 7

>saf>cm>control-measure-point.lisp
Type: Method
Arguments: ()
Outputs:
Calls: CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp

Called by: None
Description: None

2.2.3.2.8 CONTROL-MEASURE-POINT

Definition 8

>saf>cm>control-measure-point.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: ROUTE-POINT
>saf>cm>route-point.lisp
(PRESENTATION-MOUSE-HANDLER CONTROL-MEASURE-GESTURE)
No Source File Record
XY-LIST-TO-POINTS
>saf>cm>control-measure-point.lisp
(METHOD COPY CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD (SETF BOX-SIZE) CONTROL-MEASURE-POINT)
No Source File Record
(METHOD BOX-SIZE CONTROL-MEASURE-POINT)
No Source File Record
Description: None

2.2.3.2.9 CONTROL-MEASURE-POINT

Definition 9

>saf>cm>control-measure-point.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: ROUTE-POINT
>saf>cm>route-point.lisp
(PRESENTATION-MOUSE-HANDLER CONTROL-MEASURE-GESTURE)
No Source File Record
XY-LIST-TO-POINTS
>saf>cm>control-measure-point.lisp
(METHOD COPY CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD (SETF BOX-SIZE) CONTROL-MEASURE-POINT)
No Source File Record
(METHOD BOX-SIZE CONTROL-MEASURE-POINT)
No Source File Record
Description: None

2.2.3.2.10 CONTROL-MEASURE-GESTURE

Definition 10

>saf>cm>control-measure-point.lisp
Type: DEFINE-PRESENTATION-ACTION
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.2.3.2.11 XY-LIST-TO-POINTS

Definition 11

>saf>cm>control-measure-point.lisp
Type: Function
Arguments: (XY-LIST)
Outputs:
Calls: CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
Called by: MAKE-ZONE
>saf>cm>zone.lisp
MAKE-AREA
>saf>cm>area.lisp
MAKE-LINE
>saf>cm>line.lisp
Description: None

2.2.3.3 CSU cm>point.lisp

This unit contains the definition of the point control measure structure, as well as the routines to manipulate and display them. The object class for point control measures is called *cm-point*. Notice that the width and height slots for *cm-point* are :class slots, that is, there is only one slot value for all instances. In addition to make-behavior, review-data, and cm-intersection methods, cm-points can be erased, moved, deleted and copied.

The point control measure, called *cm-point*, differs from the control measure vertex point, called *control-measure-point*, in that *cm-point* is a kind of control measure, whereas *control-measure-point* is a component of every control measure.

2.2.3.3.1 CM-POINT

Definition 1

>saf>cm>point.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER CM-POINT-GESTURE)
No Source File Record
(METHOD SEND-OVERLAY-TO-SIMHOST OVERLAY)
>saf>cm>overlay.lisp
MAKE-POINT
>saf>cm>point.lisp

(PRESENTATION-FUNCTION CM-POINT HIGHLIGHTING-BOX-FUNCTION)

No Source File Record
(METHOD COPY CM-POINT)
>saf>cm>point.lisp
(METHOD (SETF HEIGHT) CM-POINT)
No Source File Record
(METHOD HEIGHT CM-POINT)
No Source File Record
(METHOD (SETF WIDTH) CM-POINT)
No Source File Record
(METHOD WIDTH CM-POINT)
No Source File Record
CISS-FOR-CONTROL-MEASURE
>saf>sys>interim-model.lisp

Description: None

2.2.3.3.2 CM-POINT-BEHAVIOR

Definition 2

>saf>cm>point.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: ROUTE
>saf>cm>r_ute.lisp
STORABLE-MIXIN
>saf>objects>storable-mixin.lisp
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp

Called by: None

Description: None

2.2.3.3.3 (METHOD SEND-BEH-INFO CM-POINT-BEHAVIOR)

Definition 3

>saf>cm>point.lisp
Type: Method
Arguments: ()
Outputs:
Calls: ROUTE
>saf>cm>route.lisp
CHANGE-SPEED
>saf>network>vars.lisp
COMBAT-INSTRUCTION-SET

>saf>ui>subordinate-tasking.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
Called by: None
Description: None

2.2.3.3.4 (METHOD COPY-BEHAVIOR CM-POINT-BEHAVIOR)

Definition 4

>saf>cm>point.lisp
Type: Method
Arguments: (CM)
Outputs:
Calls: ROUTE
 >saf>cm>route.lisp
 CHANGE-SPEED
 >saf>network>vars.lisp
 COMBAT-INSTRUCTION-SET
 >saf>ui>subordinate-tasking.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
Called by: None
Description: None

2.2.3.3.5 (METHOD MAKE-BEHAVIOR CM-POINT)

Definition 5

>saf>cm>point.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.3.6 (METHOD REVIEW-DATA CM-POINT)

Definition 6

>saf>cm>point.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *LAST-UNITS-SPEED*
 >saf>sys>vars.lisp
 M/SEC-TO-SPEED
 >saf>sys>utilities.lisp
 SPEED-TO-M/SEC

```
>saf>sys>utilities.lisp
CHANGE-SPEED
>saf>network>vars.lisp
COMBAT-INSTRUCTION-SET
>saf>ui>subordinate-tasking.lisp
*PREV-UNITS*
>saf>cm>control-measure.lisp
CM-UNIT
>saf>cm>control-measure.lisp
CM-CIS
>saf>cm>control-measure.lisp
CM-SPEED
>saf>cm>control-measure.lisp
```

Called by: None
Description: None

2.2.3.3.7 (METHOD DRAW CM-POINT)

Definition 7

```
>saf>cm>point.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
       >map>utilities.lisp
       WITH-MAP-GRAFICS
       >map>utilities.lisp
       *OVERLAY-ALU*
       >map>color-map.lisp
       CONTROL-MEASURE-LABEL
       >saf>cm>control-measure.lisp
```

Called by: None
Description: None

2.2.3.3.8 (METHOD ERASE CM-POINT)

Definition 8

```
>saf>cm>point.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
       >map>utilities.lisp
       WITH-MAP-GRAFICS
       >map>utilities.lisp
       WITH-FAST-MAP-GRAFICS
       >map>utilities.lisp
       *ERASE-OVERLAY-ALU*
       >map>color-map.lisp
       DELETE-DISPLAYED-PRESENTATION
       >saf>sys>utilities.lisp
```

Called by: None
Description: None

2.2.3.3.9 (METHOD MOVE-POINT CM-POINT)

Definition 9

>saf>cm>point.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: SINGLE-POINT
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.3.3.10 (METHOD DELETE-POINT CM-POINT)

Definition 10

>saf>cm>point.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: *PVD-DISPLAY*
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.3.3.11 (METHOD SEND-CM-INFO CM-POINT)

Definition 11

>saf>cm>point.lisp
Type: Method
Arguments: (BEH)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.3.12 (METHOD COPY CM-POINT)

Definition 12

>saf>cm>point.lisp
Type: Method
Arguments: ()

Outputs:**Calls:** NAME>saf>sysdcl.lisp
CM-POINT
>saf>cm>point.lisp
CM-POINT
>saf>cm>point.lisp
CM-POINT
>saf>cm>point.lisp**Called by:** None**Description:** None**2.2.3.3.13 (METHOD CM-INTERSECTION CM-POINT)****Definition 13**>saf>cm>point.lisp
Type: Method
Arguments: (P1 P2)
Outputs:
Calls: DISTANCE
>map>utilities.lisp
VEC-SUB
>map>vectors.lisp
Called by: None
Description: None**2.2.3.3.14 CM-POINT****Definition 14**>saf>cm>point.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER CM-POINT-GESTURE)
No Source File Record
(METHOD SEND-OVERLAY-TO-SIMHOST OVERLAY)
>saf>cm>overlay.lisp
MAKE-POINT
>saf>cm>point.lisp
(PRESENTATION-FUNCTION CM-POINT HIGHLIGHTING-BOX-
FUNCTION)
No Source File Record
(METHOD COPY CM-POINT)
>saf>cm>point.lisp
(METHOD (SETF HEIGHT) CM-POINT)
No Source File Record
(METHOD HEIGHT CM-POINT)
No Source File Record

(METHOD (SETF WIDTH) CM-POINT)
No Source File Record
(METHOD WIDTH CM-POINT)
No Source File Record
CISS-FOR-CONTROL-MEASURE
>saf>sys>interim-model.lisp
Description: None

2.2.3.3.15 CM-POINT

Definition 15

>saf>cm>point.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER CM-POINT-GESTURE)
No Source File Record
(METHOD SEND-OVERLAY-TO-SIMHOST OVERLAY)
>saf>cm>overlay.lisp
MAKE-POINT
>saf>cm>point.lisp
(PRESENTATION-FUNCTION CM-POINT HIGHLIGHTING-BOX-
FUNCTION)
No Source File Record
(METHOD COPY CM-POINT)
>saf>cm>point.lisp
(METHOD (SETF HEIGHT) CM-POINT)
No Source File Record
(METHOD HEIGHT CM-POINT)
No Source File Record
(METHOD (SETF WIDTH) CM-POINT)
No Source File Record
(METHOD WIDTH CM-POINT)
No Source File Record
CISS-FOR-CONTROL-MEASURE
>saf>sys>interim-model.lisp
Description: None

2.2.3.3.16 CM-POINT-GESTURE

Definition 16

>saf>cm>point.lisp
Type: DEFINE-PRESENTATION-ACTION
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.3.17 MAKE-POINT

Definition 17

>saf>cm>point.lisp
Type: Function
Arguments: (OVERLAY STREAM)
Outputs:
Calls: SINGLE-POINT
>map>control.lisp
POINT
>saf>interface>model-menu.lisp
CM-POINT
>saf>cm>point.lisp
CM-POINT
>saf>cm>point.lisp
CM-POINT
>saf>cm>point.lisp
POINT
>saf>interface>model-menu.lisp
Called by: (METHOD ADD-NEW-CONTROL-MEASURE OVERLAY)
>saf>cm>overlay.lisp
Description: None

2.2.3.4 CSU cm>line.lisp

This unit contains the definition of the line control measure structure, as well as the routines to manipulate and display them. In addition to *make-behavior*, *review-data* and *cm-intersection*, methods are included for moving, deleting and inserting the points that make up the line.

2.2.3.4.1 LINE

Definition 1

>saf>cm>line.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: MAKE-GRAPH-GIVEN-POINTS
>saf>interface>model-menu.lisp
MAKE-LINE
>saf>cm>line.lisp
FIND-SEGMENT-CROSS-POINTS
>saf>cm>water-avoidance.lisp
PRINT-MESSAGE
>saf>rudp>handle-incoming.lisp
SEND-LINE
>saf>network>commands.lisp
(METHOD TOP-LEVEL CONFIGURATION-MENU)
>saf>interface>formations.lisp

MAKE-LINE
>saf>cm>line.lisp
(METHOD COPY LINE)
>saf>cm>line.lisp
(METHOD INTERVENE SIMNET-AGENT FORMATION)
>saf>objects>intervention.lisp
Description: None

2.2.3.4.2 LINE-BEHAVIOR

Definition 2

>saf>cm>line.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: STORABLE-MIXIN
>saf>objects>storable-mixin.lisp
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp
Called by: None
Description: None

2.2.3.4.3 (METHOD SEND-BEH-INFO LINE-BEHAVIOR)

Definition 3

>saf>cm>line.lisp
Type: Method
Arguments: ()
Outputs:
Calls: CHANGE-SPEED
>saf>network>vars.lisp
COMBAT-INSTRUCTION-SET
>saf>ui>subordinate-tasking.lisp
Called by: None
Description: None

2.2.3.4.4 (METHOD COPY-BEHAVIOR LINE-BEHAVIOR)

Definition 4

>saf>cm>line.lisp
Type: Method
Arguments: (CM)
Outputs:
Calls: CHANGE-SPEED
>saf>network>vars.lisp
COMBAT-INSTRUCTION-SET
>saf>ui>subordinate-tasking.lisp
Called by: None
Description: None

2.2.3.4.5 (METHOD MAKE-BEHAVIOR LINE)**Definition 5**

>saf>cm>line.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.4.6 (METHOD MAKE-INSTANCE LINE AFTER)**Definition 6**

>saf>cm>line.lisp

Type: Method

Arguments: (&REST INIT-ARGS)

Outputs:

Calls: None

Called by: None

Description: None

2.2.3.4.7 (METHOD INITIALIZE-POINTS LINE)**Definition 7**

>saf>cm>line.lisp

Type: Method

Arguments: (POINT-LIST)

Outputs:

Calls: POINT

>saf>interface>model-menu.lisp

SAF

>saf>ui>frame.lisp

CONTROL-MEASURE

>saf>cm>control-measure.lisp

CONTROL-MEASURE

>saf>cm>control-measure.lisp

POINT

>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.4.8 (METHOD REVIEW-DATA LINE)**Definition 8**

>saf>cm>line.lisp

Type: Method

Arguments: ()

Outputs:

Calls: *LAST-UNITS-SPEED*
>saf>sys>vars.lisp
M/SEC-TO-SPEED
>saf>sys>utilities.lisp
SPEED-TO-M/SEC
>saf>sys>utilities.lisp
CHANGE-SPEED
>saf>network>vars.lisp
COMBAT-INSTRUCTION-SET
>saf>ui>subordinate-tasking.lisp
PREV-UNITS
>saf>cm>control-measure.lisp
CM-UNIT
>saf>cm>control-measure.lisp
CM-CIS
>saf>cm>control-measure.lisp
CM-SPEED
>saf>cm>control-measure.lisp

Called by: None

Description: None

2.2.3.4.9 (METHOD PAINT-NAME LINE)

Definition 9

>saf>cm>line.lisp
Type: Method
Arguments: (STREAM ALU)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.4.10 (DRAW-SEGMENT LINE)

Definition 10

>saf>cm>line.lisp
Type: DEFSUBST-IN-FLAVOR
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.4.11 (METHOD PAINT LINE)

Definition 11

>saf>cm>line.lisp
Type: Method
Arguments: (STREAM ALU)
Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-GRAFICS
>map>utilities.lisp
WITH-FAST-MAP-GRAFICS
>map>utilities.lisp

Called by: None
Description: None

2.2.3.4.12 (METHOD DRAW LINE)

Definition 12

>saf>cm>line.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: *OVERLAY-ALU*
>map>color-map.lisp
Called by: None
Description: None

2.2.3.4.13 (METHOD ERASE LINE)

Definition 13

>saf>cm>line.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: *ERASE-OVERLAY-ALU*
>map>color-map.lisp
Called by: None
Description: None

2.2.3.4.14 (METHOD ORTHOGONALIZE LINE)

Definition 14

>saf>cm>line.lisp
Type: Method
Arguments: ()
Outputs:
Calls: POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.3.4.15 (METHOD MOVE-POINT LINE)

Definition 15

>saf>cm>line.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
SINGLE-POINT
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.4.16 (METHOD DELETE-POINT LINE)

Definition 16

>saf>cm>line.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.4.17 (METHOD INSERT-POINT-AFTER LINE)

Definition 17

>saf>cm>line.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
SINGLE-POINT
>map>control.lisp
NAME
>saf>sysdcl.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
SAF
>saf>ui>frame.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None
Description: None

2.2.3.4.18 (METHOD INSERT-POINT-BEFORE LINE)

Definition 18

>saf>cm>line.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
SINGLE-POINT
>map>control.lisp
NAME
>saf>sysdcl.lisp

PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
SAF
>saf>ui>frame.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None
Description: None

2.2.3.4.19 (METHOD SEND-CM-INFO LINE)

Definition 19

>saf>cm>line.lisp
Type: Method
Arguments: (BEH)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.4.20 (METHOD MOVE-CONTROL-MEASURE LINE)

Definition 20

>saf>cm>line.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: SINGLE-POINT
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.3.4.21 (METHOD COPY LINE)

Definition 21

>saf>cm>line.lisp
Type: Method
Arguments: ()
Outputs:
Calls: NAME
>saf>sysdcl.lisp
POINT
>saf>interface>model-menu.lisp
LINE

```
>saf>cm>line.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
LINE
>saf>cm>line.lisp
LINE
>saf>cm>line.lisp
POINT
>saf>interface>model-menu.lisp
```

Called by: None
Description: None

2.2.3.4.22 (METHOD CM-INTERSECTION LINE)

Definition 22

```
>saf>cm>line.lisp
Type: Method
Arguments: (P1 P2)
Outputs:
Calls: None
Called by: None
Description: None
```

2.2.3.4.23 LINE

Definition 23

```
>saf>cm>line.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: MAKE-GRAPH-GIVEN-POINTS
         >saf>interface>model-menu.lisp
         MAKE-LINE
         >saf>cm>line.lisp
         FIND-SEGMENT-CROSS-POINTS
         >saf>cm>water-avoidance.lisp
         PRINT-MESSAGE
         >saf>rudp>handle-incoming.lisp
         SEND-LINE
         >saf>network>commands.lisp
         (METHOD TOP-LEVEL CONFIGURATION-MENU)
         >saf>interface>formations.lisp
         MAKE-LINE
         >saf>cm>line.lisp
         (METHOD COPY LINE)
         >saf>cm>line.lisp
         (METHOD INTERVENE SIMNET-AGENT FORMATION)
         >saf>objects>intervention.lisp
Description: None
```

2.2.3.4.24 MAKE-LINE

Definition 24

>saf>cm>line.lisp

Type: Function

Arguments: (OVERLAY STREAM)

Outputs:

Calls: RUBBER-LINE

>map>control.lisp

LINE

>saf>cm>line.lisp

LINE

>saf>cm>line.lisp

REVERSE-XY

>saf>cm>control-measure.lisp

XY-LIST-TO-POINTS

>saf>cm>control-measure-point.lisp

LINE

>saf>cm>line.lisp

LINE

>saf>cm>line.lisp

LINE

>saf>cm>line.lisp

LINE

>saf>cm>line.lisp

LINE

Called by: (METHOD ADD-NEW-CONTROL-MEASURE OVERLAY)

>saf>cm>overlay.lisp

Description: None

2.2.3.5 CSU cm>generic-area.lisp

This unit contains the definition of the generic area control measure structure, which area and zone control measures are specializations of. It has methods for making instances, and for display, moving, erasing, deleting, and inserting control-measure points.

2.2.3.5.1 GENERIC-AREA

Definition 1

>saf>cm>generic-area.lisp

Type: DEFOBJECT

Arguments: ()

Outputs:

Calls: None

Called by: ZONE

>saf>cm>zone.lisp

AREA

>saf>cm>area.lisp

GENERIC-AREA?

>saf>cm>generic-area.lisp

Description: None

2.2.3.5.2 GENERIC-AREA?

Definition 2

>saf>cm>generic-area.lisp
Type: Function
Arguments: (CM)
Outputs:
Calls: GENERIC-AREA
 >saf>cm>generic-area.lisp
 GENERIC-AREA
 >saf>cm>generic-area.lisp
Called by: None
Description: None

2.2.3.5.3 (METHOD MAKE-INSTANCE GENERIC-AREA AFTER)

Definition 3

>saf>cm>generic-area.lisp
Type: Method
Arguments: (&REST INIT-ARGS)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.5.4 (METHOD INITIALIZE-POINTS GENERIC-AREA)

Definition 4

>saf>cm>generic-area.lisp
Type: Method
Arguments: (POINT-LIST)
Outputs:
Calls: POINT
 >saf>interface>model-menu.lisp
 SAF
 >saf>ui>frame.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.3.5.5 (METHOD PAINT-NAME GENERIC-AREA)

Definition 5

>saf>cm>generic-area.lisp
Type: Method
Arguments: (STREAM ALU)

Outputs:

Calls: POINT
 >saf>interface>model-menu.lisp
POINT
 >saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.5.6 (METHOD PAINT GENERIC-AREA)

Definition 6

>saf>cm>generic-area.lisp

Type: Method

Arguments: (STREAM ALU)

Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-GRAFICS
 >map>utilities.lisp
 WITH-FAST-MAP-GRAFICS
 >map>utilities.lisp

Called by: None

Description: None

2.2.3.5.7 (METHOD DRAW GENERIC-AREA)

Definition 7

>saf>cm>generic-area.lisp

Type: Method

Arguments: (STREAM)

Outputs:

Calls: *OVERLAY-ALU*
 >map>color-map.lisp

Called by: None

Description: None

2.2.3.5.8 (METHOD ERASE GENERIC-AREA)

Definition 8

>saf>cm>generic-area.lisp

Type: Method

Arguments: (STREAM)

Outputs:

Calls: *ERASE-OVERLAY-ALU*
 >map>color-map.lisp

Called by: None

Description: None

2.2.3.5.9 (METHOD MOVE-POINT GENERIC-AREA)

Definition 9

>saf>cm>generic-area.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
SINGLE-POINT
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.5.10 (METHOD DELETE-POINT GENERIC-AREA)

Definition 10

>saf>cm>generic-area.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.5.11 (METHOD INSERT-POINT-AFTER GENERIC-AREA)

Definition 11

>saf>cm>generic-area.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
SINGLE-POINT
>map>control.lisp
NAME
>saf>sysdcl.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp .
SAF
>saf>ui>frame.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.5.12 (METHOD INSERT-POINT-BEFORE GENERIC-AREA)

Definition 12

>saf>cm>generic-area.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.5.13 (METHOD ORTHOGONALIZE GENERIC-AREA)

Definition 13

>saf>cm>generic-area.lisp
Type: Method
Arguments: ()
Outputs:
Calls: POINT
 >saf>interface>model-menu.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.3.5.14 (METHOD SEND-CM-INFO GENERIC-AREA)

Definition 14

>saf>cm>generic-area.lisp
Type: Method
Arguments: (BEH)
Outputs:
Calls: CHANGE-SPEED
 >saf>network>vars.lisp
 COMBAT-INSTRUCTION-SET
 >saf>ui>subordinate-tasking.lisp
Called by: None
Description: None

2.2.3.5.15 GENERIC-AREA

Definition 15

>saf>cm>generic-area.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: ZONE
 >saf>cm>zone.lisp
 AREA
 >saf>cm>area.lisp
 GENERIC-AREA?
 >saf>cm>generic-area.lisp
Description: None

2.2.3.6 CSU cm>area.lisp

This unit contains the definition of the area control measure structure, as well as the routines to manipulate and display them. In addition to *make-behavior*, *review-data* and *cm-intersection*, methods are included for moving, deleting and inserting the points that make up the area boundary.

The code for area and zone control measures is nearly identical. They differ in the "Types" shown in the review-data menu. The types for the area control-measure are *Assembly Area* and *Battle Position*.

2.2.3.6.1 AREA

Definition 1

>saf>cm>area.lisp

Type: DEFOBJECT

Arguments: ()

Outputs:

Calls: None

Called by: MAKE-ZONE-BEHAVIOR

>saf>cm>zone.lisp

MAKE-AREA

>saf>cm>area.lisp

MAKE-AREA-BEHAVIOR

>saf>cm>area.lisp

MAKE-LINE-BEHAVIOR

>saf>cm>line.lisp

MAKE-POINT-BEHAVIOR

>saf>cm>point.lisp

MAKE-ROUTE-BEHAVIOR

>saf>cm>route.lisp

MAKE-ROUTE-POINT

>saf>cm>route-point.lisp

MAKE-CONTROL-MEASURE-POINT

>saf>cm>control-measure-point.lisp

SEND-AREA

>saf>network>commands.lisp

MAKE-AREA

>saf>cm>area.lisp

(METHOD COPY AREA)

>saf>cm>area.lisp

Description: None

2.2.3.6.2 AREA-BEHAVIOR

Definition 2

>saf>cm>area.lisp

Type: DEFOBJECT

Arguments: ()

Outputs:

Calls: STORABLE-MIXIN

>saf>objects>storable-mixin.lisp

CONTROL-MEASURE-BEHAVIOR

>saf>cm>control-measure.lisp

Called by: None

Description: None

2.2.3.6.3 (METHOD MAKE-BEHAVIOR AREA)

Definition 3

>saf>cm>area.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.6.4 (METHOD COPY-BEHAVIOR AREA-BEHAVIOR)

Definition 4

>saf>cm>area.lisp
Type: Method
Arguments: (CM)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.6.5 (METHOD REVIEW-DATA AREA)

Definition 5

>saf>cm>area.lisp
Type: Method
Arguments: ()
Outputs:
Calls: COMBAT-INSTRUCTION-SET
 >saf>ui>subordinate-tasking.lisp
 PREV-UNITS
 >saf>cm>control-measure.lisp
 CM-UNIT
 >saf>cm>control-measure.lisp
 CM-CIS
 >saf>cm>control-measure.lisp
Called by: None
Description: None

2.2.3.6.6 (METHOD COPY AREA)

Definition 6

>saf>cm>area.lisp
Type: Method
Arguments: ()
Outputs:

Calls: NAME
>saf>sysdcl.lisp
POINT
>saf>interface>model-menu.lisp
AREA
>saf>cm>area.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
AREA
>saf>cm>area.lisp
AREA
>saf>cm>area.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None
Description: None

2.2.3.6.7 (METHOD MOVE-CONTROL-MEASURE AREA) Definition 7

>saf>cm>area.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: SINGLE-POINT
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None
Description: None

2.2.3.6.8 (METHOD CM-INTERSECTION AREA) Definition 8

>saf>cm>area.lisp
Type: Method
Arguments: (P1 P2)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.6.9 AREA

Definition 9

>saf>cm>area.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: MAKE-ZONE-BEHAVIOR
>saf>cm>zone.lisp
MAKE-AREA
>saf>cm>area.lisp
MAKE-AREA-BEHAVIOR
>saf>cm>area.lisp
MAKE-LINE-BEHAVIOR
>saf>cm>line.lisp
MAKE-POINT-BEHAVIOR
>saf>cm>point.lisp
MAKE-ROUTE-BEHAVIOR
>saf>cm>route.lisp
MAKE-ROUTE-POINT
>saf>cm>route-point.lisp
MAKE-CONTROL-MEASURE-POINT
>saf>cm>control-measure-point.lisp
SEND-AREA
>saf>network>commands.lisp
MAKE-AREA
>saf>cm>area.lisp
(METHOD COPY AREA)
>saf>cm>area.lisp

Description: None

2.2.3.6.10 MAKE-AREA

Definition 10

>saf>cm>area.lisp
Type: Function
Arguments: (OVERLAY STREAM)
Outputs:
Calls: RUBBER-LINE
>map>control.lisp
AREA
>saf>cm>area.lisp
AREA
>saf>cm>area.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
XY-LIST-TO-POINTS
>saf>cm>control-measure-point.lisp

AREA
>saf>cm>area.lisp
AREA
>saf>cm>area.lisp
AREA
>saf>cm>area.lisp
AREA
>saf>cm>area.lisp

Called by: (METHOD ADD-NEW-CONTROL-MEASURE-OVERLAY)
>saf>cm>overlay.lisp

Description: None

2.2.3.7 CSU cm>zone.lisp

This unit contains the definition of the zone control measure structure, as well as the routines to manipulate and display them. In addition to *make-behavior*, *review-data* and *cm-intersection*, methods are included for moving, deleting and inserting the points that make up the zone boundary. The types for the zone control-measure are *Recon/Surveillance Zone*, *No Fire Zone*, and *Transit Corridor*.

2.2.3.7.1 ZONE

Definition 1

>saf>cm>zone.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: MAKE-ZONE
>saf>cm>zone.lisp
SEND-ZONE
>saf>network>commands.lisp
MAKE-ZONE
>saf>cm>zone.lisp
(METHOD COPY ZONE)
>saf>cm>zone.lisp
Description: None

2.2.3.7.2 ZONE-BEHAVIOR

Definition 2

>saf>cm>zone.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: STORABLE-MIXIN
>saf>objects>storable-mixin.lisp
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp
Called by: None
Description: None

2.2.3.7.3 (METHOD COPY-BEHAVIOR ZONE-BEHAVIOR)**Definition 3**

>saf>cm>zone.lisp
Type: Method
Arguments: (CM)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.7.4 (METHOD MAKE-BEHAVIOR ZONE)**Definition 4**

>saf>cm>zone.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.7.5 (METHOD REVIEW-DATA ZONE)**Definition 5**

>saf>cm>zone.lisp
Type: Method
Arguments: ()
Outputs:
Calls: COMBAT-INSTRUCTION-SET
 >saf>ui>subordinate-tasking.lisp
 PREV-UNITS
 >saf>cm>control-measure.lisp
 CM-UNIT
 >saf>cm>control-measure.lisp
 CM-CIS
 >saf>cm>control-measure.lisp
Called by: None
Description: None

2.2.3.7.6 (METHOD COPY ZONE)**Definition 6**

>saf>cm>zone.lisp
Type: Method
Arguments: ()
Outputs:

Calls: NAME
>saf>sysdcl.lisp
POINT
>saf>interface>model-menu.lisp
ZONE
>saf>cm>zone.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
ZONE
>saf>cm>zone.lisp
ZONE
>saf>cm>zone.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.7.7 (METHOD MOVE-CONTROL-MEASURE ZONE)

Definition 7

>saf>cm>zone.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: SINGLE-POINT
>map>control.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.3.7.8 (METHOD CM-INTERSECTION ZONE)

Definition 8

>saf>cm>zone.lisp
Type: Method
Arguments: (P1 P2)
Outputs:
Calls: None
Called by: None
Description: None

2.2.3.7.9 ZONE

Definition 9

>saf>cm>zone.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: MAKE-ZONE
 >saf>cm>zone.lisp
 SEND-ZONE
 >saf>network>commands.lisp
 MAKE-ZONE
 >saf>cm>zone.lisp
 (METHOD COPY ZONE)
 >saf>cm>zone.lisp
Description: None

2.2.3.7.10 MAKE-ZONE

Definition 10

>saf>cm>zone.lisp
Type: Function
Arguments: (OVERLAY STREAM)
Outputs:
Calls: RUBBER-LINE
 >map>control.lisp
 ZONE
 >saf>cm>zone.lisp
 ZONE
 >saf>cm>zone.lisp
 REVERSE-XY
 >saf>cm>control-measure.lisp
 XY-LIST-TO-POINTS
 >saf>cm>control-measure-point.lisp
 ZONE
 >saf>cm>zone.lisp
 ZONE
 >saf>cm>zone.lisp
 ZONE
 >saf>cm>zone.lisp
 ZONE
 >saf>cm>zone.lisp
Called by: (METHOD ADD-NEW-CONTROL-MEASURE OVERLAY)
 >saf>cm>overlay.lisp
Description: None

2.2.4 Routes CSC

This CSC contains the code to create, manipulate and check routes. It supports the automatic generation of road routes via an A* algorithm and the automatic checking for routes that would cause a unit to go through unfordable water. The CSUs in this CSC are:

```
cm>water-avoidance.lisp csu
cm>water-check.lisp csu
cm>route-point.lisp csu
cm>road-routes.lisp csu
cm>route-finder.lisp csu
cm>route.lisp csu
```

2.2.4.1 CSU cm>water-avoidance.lisp

This unit contains routines that generate ground routes around water, using bridges, fording points and ends of water segments. A vector approach is used to find crossings for each water segment encountered in turn. Routines to skirt lakes and river bends are also included in this unit.

The algorithm for generating these water-avoiding routes is somewhat complex; a conceptual overview is provided in Appendix A1, Water Avoidance Algorithm.

2.2.4.1.1 *INTERSECTIONS-SEARCHED*

Definition 1

```
>saf>cm>water-avoidance.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: FOLLOW-WATER-SEGMENTS
          >saf>cm>water-avoidance.lisp
          FIND-ROUTE-CORE
          >saf>cm>water-avoidance.lisp
Description: None
```

2.2.4.1.2 *QUADS-INDEX-LIST*

Definition 2

```
>saf>cm>water-avoidance.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: FINAL-RELAX-POINTS
          >saf>cm>water-avoidance.lisp
          RELAX-POINTS-AUX
          >saf>cm>water-avoidance.lisp
          RELAX-POINTS
          >saf>cm>water-avoidance.lisp
```

FIND-SUITABLE-CROSSING-ROUTE
>saf>cm>water-avoidance.lisp
FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp
FIND-ROUTE-AROUND-WATER
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.3 FIND-ROUTE-AROUND-WATER

Definition 3

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (X1 Y1 X2 Y2 &OPTIONAL (OFFSET 50))

Outputs:

Calls: *OPFOR-IO*

>saf>sys>vars.lisp

SAY

>saf>sys>macros.lisp

ROUTE

>saf>cm>route.lisp

ALL-WIDE-SEGMENTS-THRU-WATER

>saf>cm>water-check.lisp

QUADS-INDEX-LIST

>saf>cm>water-avoidance.lisp

FIND-ROUTE-CORE

>saf>cm>water-avoidance.lisp

FIRST-ITEMS

>saf>cm>water-avoidance.lisp

FINAL-RELAX-POINTS

>saf>cm>water-avoidance.lisp

GET-QUADS-IN-REGION

>saf>cm>water-avoidance.lisp

ROUTE

>saf>cm>route.lisp

ROUTE

>saf>cm>route.lisp

Called by: (METHOD CHECK-ROUTE-SEGMENT ROUTE)

>saf>cm>route.lisp

Description: None

2.2.4.1.4 THRU-RIVER-BEND

Definition 4

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (WATER-LIST)

Outputs:

Calls: None

Called by: FIND-SUITABLE-CROSSING-ROUTE
>saf>cm>water-avoidance.lisp
FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.5 FIND-ROUTE-CORE

Definition 5

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (POINT-LIST WATER-LIST &OPTIONAL (OFFSET 100.0))
Outputs:
Calls: *INTERSECTIONS-SEARCHED*
>saf>cm>water-avoidance.lisp
QUADS-INDEX-LIST
>saf>cm>water-avoidance.lisp
THRU-RIVER-BEND
>saf>cm>water-avoidance.lisp
FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp
FIND-WATER-INTERSECTIONS
>saf>cm>water-avoidance.lisp
FIND-SUITABLE-CROSSING-ROUTE
>saf>cm>water-avoidance.lisp
INTERSECTION-DIRECTION
>saf>cm>water-avoidance.lisp
FIND-CLOSER-CROSSING
>saf>cm>water-avoidance.lisp
CROSSING-LOCATION
>saf>cm>water-avoidance.lisp
SKIRT-LAKE
>saf>cm>water-avoidance.lisp
SKIRT-RIVER-BEND
>saf>cm>water-avoidance.lisp
GET-QUADS-IN-REGION
>saf>cm>water-avoidance.lisp
Called by: FIND-ROUTE-AROUND-WATER
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.6 FOLLOW-WATER-SEGMENTS

Definition 6

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (PAIR DIRECTION LEVEL SEGMENT-LIST OFFSET)

Outputs:

Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
WATER-INTERSECTION-ARRAY
>map>terrain-vars.lisp
BRIDGE-ARRAY
>map>terrain-vars.lisp
QUAD-TREE
>map>terrain-vars.lisp
INTERSECTIONS-SEARCHED
>saf>cm>water-avoidance.lisp
FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp
GET-PAIRS-BY-DIRECTION
>saf>cm>water-avoidance.lisp

Called by: FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp
FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.7 FIND-WATER-INTERSECTIONS

Definition 7

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (WATER-INDEX)
Outputs:
Calls: *WATER-INTERSECTION-ARRAY*
>map>terrain-vars.lisp
Called by: FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.8 GET-PAIRS-BY-DIRECTION

Definition 8

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (INTERSECTION WATER-INDEX DIRECTION)
Outputs:
Calls: None
Called by: FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.9 FIND-SUITABLE-CROSSING-ROUTE

Definition 9

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (START NEXT-CROSSING REST-CROSSINGS PREV-SEGMENT-LIST LAST-CROSSING DESTINATION DIRECTION OFFSET)

Outputs:

Calls: ALL-WIDE-SEGMENTS-THRU-WATER

>saf>cm>water-check.lisp

QUADS-INDEX-LIST

>saf>cm>water-avoidance.lisp

THRU-RIVER-BEND

>saf>cm>water-avoidance.lisp

FIND-SUITABLE-CROSSING-ROUTE

>saf>cm>water-avoidance.lisp

SET-XOR

>saf>cm>water-avoidance.lisp

EXTEND-CROSSING

>saf>cm>water-avoidance.lisp

SKIRT-RIVER

>saf>cm>water-avoidance.lisp

SKIRT-LAKE

>saf>cm>water-avoidance.lisp

SKIRT-RIVER-BEND

>saf>cm>water-avoidance.lisp

Called by: FIND-SUITABLE-CROSSING-ROUTE

>saf>cm>water-avoidance.lisp

FIND-ROUTE-CORE

>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.10 SET-XOR

Definition 10

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (LIST1 LIST2)

Outputs:

Calls: None

Called by: FIND-SUITABLE-CROSSING-ROUTE

>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.11 EXTEND-CROSSING

Definition 11

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (CROSSING DIRECTION &OPTIONAL (OFFSET 100.0))

Outputs:

Calls: EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp
EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
EXTEND-SEGMENT
>saf>cm>water-avoidance.lisp

Called by: FIND-SUITABLE-CROSSING-ROUTE
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.12 EXTEND-INTERSECTION

Definition 12

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (INTERSECTION DIRECTION &OPTIONAL (OFFSET 100.0))

Outputs:

Calls: *WATER-SEGMENT-ARRAY*

>map>terrain-vars.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp
FIND-NEXT-POINT

>saf>cm>water-avoidance.lisp

Called by: EXTEND-CROSSING
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.13 FIRST-ITEMS

Definition 13

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (LIST INDEX)

Outputs:

Calls: None

Called by: EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
FIND-ROUTE-AROUND-WATER
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.14 EXTEND-BRIDGE

Definition 14

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (BRIDGE SEGMENT-LIST DIRECTION &OPTIONAL (OFFSET
200.0))
Outputs:
Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
FIRST-ITEMS
>saf>cm>water-avoidance.lisp
FIND-FIRST-VECTOR
>saf>cm>water-avoidance.lisp
FIND-NEXT-POINT
>saf>cm>water-avoidance.lisp
Called by: EXTEND-CROSSING
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.15 EXTEND-SEGMENT

Definition 15

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (SEGMENT SEGMENT-LIST DIRECTION &OPTIONAL (OFFSET
100.0))
Outputs:
Calls: PIE
>map>utilities.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp

FIND-FIRST-VECTOR
>saf>cm>water-avoidance.lisp
FIND-SEGMENT-CROSS-POINTS
>saf>cm>water-avoidance.lisp

Called by: EXTEND-CROSSING
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.16 INTERSECTION-DIRECTION

Definition 16

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (ORIGIN WATER-LIST INT-INDEX)

Outputs:

Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
WATER-INTERSECTION-ARRAY
>map>terrain-vars.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
FIND-DIRECTION-AT-CROSSING
>saf>cm>water-avoidance.lisp

Called by: FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.17 NORMALIZE-AND-ROTATE

Definition 17

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (ORIGIN-VECTOR VECTOR-A VECTOR-B)

Outputs:

Calls: VEC-NORMALIZE
>map>vectors.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp

Called by: FIND-DIRECTION-AT-CROSSING
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.18 FIND-FIRST-VECTOR

Definition 18

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (ORIGIN-VECTOR VECTOR-A VECTOR-B DIRECTION)

Outputs:

Calls: VEC-ROTATE
>map>vectors.lisp
VECTOR-IS-FIRST-P
>saf>cm>water-avoidance.lisp
Called by: OFFSET-POINT
>saf>cm>water-avoidance.lisp
EXTEND-SEGMENT
>saf>cm>water-avoidance.lisp
EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.19 VECTOR-IS-FIRST-P

Definition 19

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (ANGLE1 ANGLE2 DIRECTION)

Outputs:

Calls: None

Called by: FIND-FIRST-VECTOR
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.20 FIND-NEXT-POINT

Definition 20

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (XY POINTS)

Outputs:

Calls: None

Called by: EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.21 FIND-SEGMENT-CROSS-POINTS

Definition 21

>saf>cm>water-avoidance.lisp

Type: Function

Arguments: (SEGMENT PREV-SEGMENT-INDEX OFFSET)

Outputs:

Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
DISTANCE
>map>utilities.lisp
VEC-SUB

>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp
LINE
>saf>cm>line.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
LINE
>saf>cm>line.lisp
LINE
>saf>cm>line.lisp
Called by: EXTEND-SEGMENT
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.22 FIND-CLOSER-CROSSING

Definition 22

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (CROSSINGS-1 CROSSINGS-2 XY)
Outputs:
Calls: DISTANCE
>map>utilities.lisp
CROSSING-LOCATION
>saf>cm>water-avoidance.lisp
Called by: FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.23 SKIRT-RIVER

Definition 23

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (START DESTINATION CROSSING LAST-CROSSING SEGMENT-
LIST DIRECTION OFFSET)
Outputs:
Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
FIND-RIVER-POINTS
>saf>cm>water-avoidance.lisp
OFFSET-POINTS
>saf>cm>water-avoidance.lisp
PRUNE-TO-POINT
>saf>cm>water-avoidance.lisp
RELAX-POINTS
>saf>cm>water-avoidance.lisp
FLAT-LIST-TO-POINTS
>saf>cm>water-avoidance.lisp

Called by: FIND-SUITABLE-CROSSING-ROUTE
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.24 FIND-RIVER-POINTS

Definition 24

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (SEGMENT-LIST CROSSING LAST-CROSSING)
Outputs:
Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
ALIGN-POINTS
>saf>cm>water-avoidance.lisp
CROSSING-LOCATION
>saf>cm>water-avoidance.lisp
Called by: SKIRT-RIVER
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.25 ALIGN-POINTS

Definition 25

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (POINTS1 POINTS2 DIRECTION)
Outputs:
Calls: REVERSE-XY
>saf>cm>control-measure.lisp
Called by: CROSSING-LOCATION
>saf>cm>water-avoidance.lisp
FIND-RIVER-POINTS
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.26 OFFSET-POINTS

Definition 26

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (POINTS ORIGIN OFFSET DIRECTION)
Outputs:
Calls: VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
OFFSET-POINT
>saf>cm>water-avoidance.lisp

Called by: SKIRT-RIVER-BEND
>saf>cm>water-avoidance.lisp
FOLLOW-LAKE-AROUND
>saf>cm>water-avoidance.lisp
SKIRT-RIVER
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.27 OFFSET-POINT

Definition 27

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (P1 P2 P3 DIRECTION OFFSET)
Outputs:

Calls: PIE
>map>utilities.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp
VEC-ANGLE
>map>vectors.lisp
FIND-FIRST-VECTOR
>saf>cm>water-avoidance.lisp

Called by: SKIRT-LAKE
>saf>cm>water-avoidance.lisp
OFFSET-POINTS
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.1.28 PRUNE-TO-POINT

Definition 28

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (POINTS ORIGIN DIRECTION)
Outputs:
Calls: DISTANCE
>map>utilities.lisp
POINT
>saf>interface>model-menu.lisp
POINT
>saf>interface>model-menu.lisp

Called by: SKIRT-RIVER-BEND
>saf>cm>water-avoidance.lisp
SKIRT-RIVER
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.29 CROSSING-LOCATION

Definition 29

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (CROSSING)
Outputs:
Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
ALIGN-POINTS
>saf>cm>water-avoidance.lisp
Called by: FIND-RIVER-POINTS
>saf>cm>water-avoidance.lisp
FIND-CLOSER-CROSSING
>saf>cm>water-avoidance.lisp
FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.30 RELAX-POINTS

Definition 30

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (START DESTINATION POINTS OFFSET)
Outputs:
Calls: *QUADS-INDEX-LIST*
>saf>cm>water-avoidance.lisp
RELAX-POINTS-AUX
>saf>cm>water-avoidance.lisp
GET-QUADS-IN-REGION
>saf>cm>water-avoidance.lisp
Called by: SKIRT-RIVER-BEND
>saf>cm>water-avoidance.lisp
FOLLOW-LAKE-AROUND
>saf>cm>water-avoidance.lisp
SKIRT-RIVER
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.31 RELAX-POINTS-AUX**Definition 31**

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (START POINTS OFFSET)
Outputs:
Calls: POINT
 >saf>interface>model-menu.lisp
 ANY-WIDE-SEGMENT-THRU-WATER
 >saf>cm>water-check.lisp
 QUADS-INDEX-LIST
 >saf>cm>water-avoidance.lisp
 RELAX-POINTS-AUX
 >saf>cm>water-avoidance.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: RELAX-POINTS-AUX
 >saf>cm>water-avoidance.lisp
 RELAX-POINTS
 >saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.32 FINAL-RELAX-POINTS**Definition 32**

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (START POINTS OFFSET)
Outputs:
Calls: POINT
 >saf>interface>model-menu.lisp
 ANY-WIDE-SEGMENT-THRU-WATER
 >saf>cm>water-check.lisp
 QUADS-INDEX-LIST
 >saf>cm>water-avoidance.lisp
 FINAL-RELAX-POINTS
 >saf>cm>water-avoidance.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: FINAL-RELAX-POINTS
 >saf>cm>water-avoidance.lisp
 FIND-ROUTE-AROUND-WATER
 >saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.33 FLAT-LIST-TO-POINTS

Definition 33

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (POINTS)
Outputs:
Calls: None
Called by: SKIRT-RIVER-BEND
 >saf>cm>water-avoidance.lisp
 SKIRT-LAKE
 >saf>cm>water-avoidance.lisp
 SKIRT-RIVER
 >saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.34 SKIRT-LAKE

Definition 34

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (START LAKE-LIST NEXT-LIST OFFSET)
Outputs:
Calls: *WATER-AREA-ARRAY*
 >map>terrain-vars.lisp
 POINT
 >saf>interface>model-menu.lisp
 OFFSET-POINT
 >saf>cm>water-avoidance.lisp
 FLAT-LIST-TO-POINTS
 >saf>cm>water-avoidance.lisp
 DISTANCE-AROUND-PATH
 >saf>cm>water-avoidance.lisp
 FOLLOW-LAKE-AROUND
 >saf>cm>water-avoidance.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: FIND-SUITABLE-CROSSING-ROUTE
 >saf>cm>water-avoidance.lisp
 FIND-ROUTE-CORE
 >saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.35 DISTANCE-AROUND-PATH

Definition 35

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (PATH)
Outputs:

Calls: DISTANCE
 >map>utilities.lisp
Called by: SKIRT-LAKE
 >saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.36 FOLLOW-LAKE-AROUND

Definition 36

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (START DESTINATION LAKE-POINTS MIN-START MIN-
DESTINATION INCREMENT OFFSET)
Outputs:
Calls: OFFSET-POINTS
 >saf>cm>water-avoidance.lisp
 RELAX-POINTS
 >saf>cm>water-avoidance.lisp
Called by: SKIRT-LAKE
 >saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.37 SKIRT-RIVER-BEND

Definition 37

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (START DESTINATION WATER-LIST OFFSET)
Outputs:
Calls: *WATER-SEGMENT-ARRAY*
 >map>terrain-vars.lisp
 OFFSET-POINTS
 >saf>cm>water-avoidance.lisp
 PRUNE-TO-POINT
 >saf>cm>water-avoidance.lisp
 RELAX-POINTS
 >saf>cm>water-avoidance.lisp
 FLAT-LIST-TO-POINTS
 >saf>cm>water-avoidance.lisp
 FIND-RIVER-BEND-POINTS
 >saf>cm>water-avoidance.lisp
 FIND-DIRECTION-AT-CROSSING
 >saf>cm>water-avoidance.lisp
Called by: FIND-SUITABLE-CROSSING-ROUTE
 >saf>cm>water-avoidance.lisp
 FIND-ROUTE-CORE
 >saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.38 FIND-RIVER-BEND-POINTS

Definition 38

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (FIRST-CROSSING LAST-CROSSING)
Outputs:
Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
Called by: SKIRT-RIVER-BEND
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.39 FIND-DIRECTION-AT-CROSSING

Definition 39

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (WATER-POINTS ORIGIN WATER-LIST POINT-DIRECTION)
Outputs:
Calls: VEC-SUB
>map>vectors.lisp
NORMALIZE-AND-ROTATE
>saf>cm>water-avoidance.lisp
Called by: SKIRT-RIVER-BEND
>saf>cm>water-avoidance.lisp
INTERSECTION-DIRECTION
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.1.40 GET-QUADS-IN-REGION

Definition 40

>saf>cm>water-avoidance.lisp
Type: Function
Arguments: (POINT-LIST)
Outputs:
Calls: *QUAD-TREE*
>map>terrain-vars.lisp
GET-QUADS-PASSED-THRU
>saf>cm>water-check.lisp
Called by: RELAX-POINTS
>saf>cm>water-avoidance.lisp
FIND-ROUTE-CORE
>saf>cm>water-avoidance.lisp
FIND-ROUTE-AROUND-WATER
>saf>cm>water-avoidance.lisp
Description: None

2.2.4.2 CSU cm>water-check.lisp

This unit contains routines to check if ground routes cross water, which can be either rivers or lakes. These functions are called by the water-avoidance code in CSU cm>water-avoidance.lisp. Routines are provided that check if routes cross any water or return an ordered list of the water features that are crossed.

The function any-wide-segment-thru-water checks to see if a segment passes within a given clearance of water. This is done by constructing parallel segments on either side and checking to see if they cross water. This check is accomplished by a call to segment-thru-water.

The function segment-thru-water calls get-quads-passed-thru to obtain a lists of the rivers and lakes in the quads the segment passes through. This list is then used in calls to segment-thru-river and segment-thru-lake.

The function segment-thru-river loops through all the water segments in the rivers list returned by get-quads-passed-thru, checking to see if the water-segment intersects the segment from (x1, y1) to (x2, y2). It returns as soon as it finds the first intersection; fordable water segments are ignored.

The function segment-thru-lake checks a segment for lake intersections. This task is made complex because a lake can contain islands, which may contain lakes, which themselves may have islands, etc. To deal with this, lake/island representations are stored in a recursive data-structure where the first element is the outer boundary of the lake or island, and the second element is a list of the lake/island data-structures for the next level of boundaries that lie inside the outer one. If the level zero boundary is a lake, even level boundaries are the outer boundaries of lakes and odd level boundaries are the outer boundaries of islands.

Using this data-structure, checking for lake intersections is reduced to checking for intersections with the polygonal boundaries at various levels. In segment-thru-lake, a call is made to check-lake-intersections. This function calls itself recursively, incrementing the depth level in the lake/island data-structure. It also calls polygon-intersection to check if the segment crosses the polygonal lake/island boundaries.

The function all-wide-segments-thru-water returns a list of all water crossings, unlike any-wide-segment-thru-water, which only returns the first intersection it finds. This is done via a call to water-thru, which, like segment-thru-water, calls get-quads-passed-thru, then makes separate calls to check rivers and lakes. The river check is accomplished by the function water-segments-thru, the lake check by the function lake-thru. The final list of water-crossings is sorted by the distance from a designated endpoint of the route segment; the sort is useful to the water-avoidance algorithm.

2.2.4.2.1 ANY-WIDE-SEGMENT-THRU-WATER

Definition 1

>saf>cm>water-check.lisp

Type: Function

Arguments: (XY1 XY2 OFFSET &OPTIONAL INDEX-LIST (QUAD-TREE *QUAD-TREE*))

Outputs:**Calls:** *QUAD-TREE*

>map>terrain-vars.lisp
PIE
>map>utilities.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp
SEGMENT-THRU-WATER
>saf>cm>water-check.lisp

Called by: FINAL-RELAX-POINTS

>saf>cm>water-avoidance.lisp
RELAX-POINTS-AUX
>saf>cm>water-avoidance.lisp

Description: None**2.2.4.2.2 SEGMENT-THRU-WATER****Definition 2**

>saf>cm>water-check.lisp

Type: Function**Arguments:** (XY1 XY2 &OPTIONAL INDEX-LIST (QUAD-TREE *QUAD-TREE*))**Outputs:****Calls:** *QUAD-TREE*

>map>terrain-vars.lisp
SEGMENT-THRU-RIVER
>saf>cm>water-check.lisp
SEGMENT-THRU-LAKE
>saf>cm>water-check.lisp
GET-QUADS-PASSED-THRU
>saf>cm>water-check.lisp

Called by: (METHOD CHECK-ROUTE-SEGMENT ROUTE)

>saf>cm>route.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
GET-BRIDGE-POINTS
>saf>cm>road-routes.lisp

Description: None**2.2.4.2.3 SEGMENT-THRU-RIVER****Definition 3**

>saf>cm>water-check.lisp

Type: Function**Arguments:** (X1 Y1 X2 Y2 INDEX-LIST)

Outputs:**Calls:** *WATER-SEGMENT-ARRAY*

>map>terrain-vars.lisp

POSSIBLE-INTERSECTION

>map>intersection.lisp

Called by: SEGMENT-THRU-WATER

>saf>cm>water-check.lisp

Description: None**2.2.4.2.4 *INSIDE-LEVEL*****Definition 4**

>saf>cm>water-check.lisp

Type: Variable**Arguments:** ()**Outputs:****Calls:** None**Called by:** CHECK-LAKE-INTERSECTIONS

>saf>cm>water-check.lisp

SEGMENT-THRU-LAKE

>saf>cm>water-check.lisp

Description: None**2.2.4.2.5 SEGMENT-THRU-LAKE****Definition 5**

>saf>cm>water-check.lisp

Type: Function**Arguments:** (X1 Y1 X2 Y2 INDEX-LIST)**Outputs:****Calls:** *WATER-AREA-ARRAY*

>map>terrain-vars.lisp

WATER-AREA-TRIANGLES

>map>terrain-vars.lisp

INSIDE-LEVEL

>saf>cm>water-check.lisp

CHECK-LAKE-INTERSECTIONS

>saf>cm>water-check.lisp

Called by: SEGMENT-THRU-WATER

>saf>cm>water-check.lisp

Description: None**2.2.4.2.6 POLYGON-INTERSECTION****Definition 6**

>saf>cm>water-check.lisp

Type: Function**Arguments:** (POLYGON X3 Y3 X4 Y4)**Outputs:****Calls:** None

Called by: CHECK-LAKE-INTERSECTIONS
>saf>cm>water-check.lisp
Description: None

2.2.4.2.7 CHECK-LAKE-INTERSECTIONS

Definition 7

>saf>cm>water-check.lisp
Type: Function
Arguments: (LAKE X1 Y1 X2 Y2 LEVEL)
Outputs:
Calls: SEGMENT-INSIDE-POLYGON-P
>map>intersection.lisp
INSIDE-LEVEL
>saf>cm>water-check.lisp
POLYGON-INTERSECTION
>saf>cm>water-check.lisp
CHECK-LAKE-INTERSECTIONS
>saf>cm>water-check.lisp
Called by: CHECK-LAKE-INTERSECTIONS
>saf>cm>water-check.lisp
SEGMENT-THRU-LAKE
>saf>cm>water-check.lisp
Description: None

2.2.4.2.8 ALL-WIDE-SEGMENTS-THRU-WATER

Definition 8

>saf>cm>water-check.lisp
Type: Function
Arguments: (XY1 XY2 OFFSET &OPTIONAL INDEX-LIST (QUAD-TREE *QUAD-TREE*))
Outputs:
Calls: *QUAD-TREE*
>map>terrain-vars.lisp
PIE
>map>utilities.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp
WATER-THRU
>saf>cm>water-check.lisp

Called by: FIND-SUITABLE-CROSSING-ROUTE
>saf>cm>water-avoidance.lisp
FIND-ROUTE-AROUND-WATER
>saf>cm>water-avoidance.lisp

Description: None

2.2.4.2.9 WATER-THRU

Definition 9

>saf>cm>water-check.lisp
Type: Function
Arguments: (XY1 XY2 INDEX-LIST &OPTIONAL (QUAD-TREE *QUAD-TREE*))
Outputs:
Calls: *QUAD-TREE*
>map>terrain-vars.lisp
DISTANCE
>map>utilities.lisp
WATER-SEGMENTS-THRU
>saf>cm>water-check.lisp
LAKES-THRU
>saf>cm>water-check.lisp
GET-QUADS-PASSED-THRU
>saf>cm>water-check.lisp
Called by: ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
Description: None

2.2.4.2.10 WATER-SEGMENTS-THRU

Definition 10

>saf>cm>water-check.lisp
Type: Function
Arguments: (X1 Y1 X2 Y2 INDEX-LIST)
Outputs:
Calls: *WATER-SEGMENT-ARRAY*
>map>terrain-vars.lisp
POSSIBLE-INTERSECTION
>map>intersection.lisp
Called by: WATER-THRU
>saf>cm>water-check.lisp
Description: None

2.2.4.2.11 LAKES-THRU

Definition 11

>saf>cm>water-check.lisp
Type: Function
Arguments: (X3 Y3 X4 Y4 INDEX-LIST)

Outputs:

Calls: *WATER-AREA-ARRAY*
>map>terrain-vars.lisp
WATER-AREA-TRIANGLES
>map>terrain-vars.lisp
SEGMENT-INSIDE-POLYGON-P
>map>intersection.lisp
POSSIBLE-INTERSECTION
>map>intersection.lisp
Called by: WATER-THRU
>saf>cm>water-check.lisp
Description: None

2.2.4.2.12 GET-QUADS-PASSED-THRU**Definition 12**

>saf>cm>water-check.lisp
Type: Function
Arguments: (X1 Y1 X2 Y2 QUAD-TREE)
Outputs:
Calls: GET-QUAD-NODES
>map>quadtree-search.lisp
Called by: GET-QUADS-IN-REGION
>saf>cm>water-avoidance.lisp
WATER-THRU
>saf>cm>water-check.lisp
SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
Description: None

2.2.4.3 CSU cm>route-point.lisp

This unit contains the definition of the route points, which are specialized control measure points. The first slot in the route-point object is a boolean variable called road-point. It is true if the route point is intended to be part of a road route, and nil otherwise. Cross country routes will be made of points with this slot set to nil; road routes will be made of points with this slot set to true. A route point with the road-point slot true can be called a road-point, even though there is no separate object class for these kind of route-points. The next three slots are only relevant if the route-point is a road point. The intersection-index slot is non-nil if the point is intended to be at a road-intersection. In this case, its value is simply the index, in the road intersections array, of that road intersection. Other road-points are intended to be points in the interior of a road segment (a portion of road connecting two road-intersections). These will have the third slot, road-index, set to the non-nil value of the index, in the road-segments array, of that road segment. It is worth noting that a dead-end of a road segment is considered a road intersection, so every road segment has two ends, which are road intersections. (Roads that run off the edge of the map end in an intersection; circular roads start and end at the same intersection.) The fourth slot, expanded-route, is used to store a list of road-indices and traversal directions that describes a road path from a previous road-point to the given road-point. This slot is convenient because many of the road route algorithms construct routes as a series of paths from one road-point to another; the expanded-route slot provides a convenient place to put the description of the path.

2.2.4.3.1 ROUTE-POINT

Definition 1

>saf>cm>route-point.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.4.3.2 (METHOD COPY ROUTE-POINT)

Definition 2

>saf>cm>route-point.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.4.3.3 ROUTE-POINT

Definition 3

>saf>cm>route-point.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.4.3.4 XY-LIST-TO-ROUTE-POINTS

Definition 4

>saf>cm>route-point.lisp
Type: Function
Arguments: (XY-LIST)
Outputs:
Calls: None
Called by: MAKE-ROUTE
 >saf>cm>route.lisp
Description: None

2.2.4.4 CSU cm>road-routes.lisp

This unit contains the routines for entering road routes, as well as routines for expanding the road routes so they can be drawn on the color display.

The top-level function in this unit, get-road-route, is called by the function make-route, in CSU cm>route.lisp, when the user selects "Road Route" from the route menu. It allows the user to create a road route by clicking on a series of points. As each new point is selected, a road route from the last point to the new point is constructed and drawn on the PVD. Mouse documentation presented by get-road-route allows the user to select a new road-point, remove the last road-point, or exit from the road-point selection mode. When mouse-left is selected, a new road-point is created, by the function get-road-point, at or near the current mouse location. Then, the function expand-route is called to create a road route from the previous road-point to the newly selected road-point. This expanded route is then drawn on the PVD by a call to the function draw-expanded-route, with the overlay-alu. When mouse-right is selected, the last road-point is deleted, and the previously constructed road-route leading to the last point is erased by a call to draw-expanded-route, this time using the erase-overlay-alu.

The function get-road-point takes a point (specified by a coordinate pair from a mouse selection) and returns a road-point located at the nearest road intersection or road segment to the selected point. First, it calls the function find-nearest-intersection, to find the closest intersection to the selected point. If this intersection is "within the cursor" (within 10 pixels of the selected point, as determined by the function within-cursor), the intersection is chosen as the road-point. Otherwise, the function find-nearest-road-segment is called to find the closest segment to the selected point; the closest point on this segment is chosen as the road-point.

The function find-nearest-road-segment calls get-neighbor-quad-roads to explore nearby quads for road segments. It first tries a fast check for road segments that pass very close to the selected point, within 8 pixels. If it is unable to find a road segment of this kind, it does a slower, more systematic check of road segments, calling parallel-distance to compute the distance from the selected point to the closest point on each road segment found in the nearby quads.

The function expand-route calls expand-road-route to find an optimal route from one road-point to another. The function expand-road-route constructs, for each road-point, a list of intersections. If the road-point represents a road intersection (that is, if its intersection-index slot is non-nil), the intersection list constructed will be of length one, consisting of the intersection index of the road-point. If the road-point represents a road-segment (that is, if its road-index slot is non-nil), the intersection list constructed will be of length two, consisting of the two intersection indices of the two ends of the road segment of the given road-point, as computed by the utility function find-road-intersections. Once the two intersection lists (intersections-1 and intersections-2) are constructed, expand-road-route makes four calls to the function find-route, in CSU cm>route-finder.lisp, to find the shortest routes between various pairs of road intersections. Since each intersection list may have up to two members, there are four possible combinations to test. Of these four, the shortest is selected, by the function find-shortest-route, and returned. If find-route was unable to find any route, the user is advised to choose an intermediate point, to make the connection process easier.

The function draw-expanded-route, called by get-road-route, draws the road route to a newly selected road-point. It can also be used to erase, by passing it an erasing alu. It begins by drawing a distinguishing box around the road-point, with corners at offsets 4

pixels from the road-point. It then calls draw-expanded-route-core to draw the actual road route.

The function draw-expanded-route-core draws the road-route from one road point (the argument prev-point) to the next (the argument road-point). Road segments, which end at intersections, are made up of shorter linear parts called "legs". A road segment which is fully traversed by the route will have all its legs drawn, while a road segment which contains the start and/or finish road-points may not be fully traversed by the route. For example, if a route starts somewhere near the middle of an east-west road segment, and runs east from there, the only legs in that road-segment that are part of the route are those east of the starting point. For this reason, draw-expanded-route-core is divided into two cases according to whether the start and end points are on the same road segment. (They may even be on the same leg as well.) In each case, road segments that are not fully traversed are handled separately from those that are fully traversed.

Finally, this unit includes functions that handle bridge crossings. In the road-segment array, a bridge is represented as a short road-segment. A boolean slot identifies those road-segments that are bridges. There is also a separate array, called *bridge-array*, containing only the bridges; it is used when a fast scan of bridges is required.

The function get-bridge-route allows the user to include bridges in a cross-country ground route. After the user clicks near the bridge they want to cross, the function calls find-nearest-bridge, which scans the road-indices returned by get-neighbor-quad-roads, locating the intended bridge. Then, get-bridge-points is called. Its purpose is to find points near the ends of the bridge, but far enough away to give groups of vehicles time to change to column formation before crossing the bridge. It allows 200 meters for this. The direction of traversal of the bridge is inferred using water checks, on the assumption that crossing it the right way will create a water-avoiding route from the previous point. If there is no previous point, get-bridge-points calls mouse-on-bridge-approach-point to get explicit guidance from the user about which side of the river to approach the bridge from.

2.2.4.4.1 GET-ROAD-ROUTE

Definition 1

>saf>cm>road-routes.lisp
Type: Function
Arguments: (STREAM)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
SCREEN-TO-WORLD
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
PVD-DISPLAY
>saf>sys>vars.lisp

GET-ROAD-POINT
>saf>cm>road-routes.lisp
EXPAND-ROUTE
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE
>saf>cm>road-routes.lisp
Called by: MAKE-ROUTE
>saf>cm>route.lisp
Description: None

2.2.4.4.2 GET-ROAD-POINT

Definition 2

>saf>cm>road-routes.lisp
Type: Function
Arguments: (X Y &OPTIONAL POINT)
Outputs:
Calls: *ROAD-INTERSECTION-ARRAY*
>map>terrain-vars.lisp
POINT
>saf>interface>model-menu.lisp
FIND-NEAREST-INTERSECTION
>saf>cm>road-routes.lisp
FIND-NEAREST-ROAD-SEGMENT
>saf>cm>road-routes.lisp
WITHIN-CURSOR
>saf>cm>road-routes.lisp
POINT
>saf>interface>model-menu.lisp
Called by: (METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp
GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.3 GET-ROAD-SEGMENT-POINT

Definition 3

>saf>cm>road-routes.lisp
Type: Function
Arguments: (X Y &OPTIONAL POINT)
Outputs:
Calls: POINT
>saf>interface>model-menu.lisp
FIND-NEAREST-ROAD-SEGMENT
>saf>cm>road-routes.lisp
POINT
>saf>interface>model-menu.lisp

Called by: (METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp

Description: None

2.2.4.4.4 FIND-NEAREST-INTERSECTION

Definition 4

>saf>cm>road-routes.lisp
Type: Function
Arguments: (X-WC Y-WC &OPTIONAL (QUAD-TREE *QUAD-TREE*))
Outputs:
Calls: *ROAD-INTERSECTION-ARRAY*
>map>terrain-vars.lisp
QUAD-TREE
>map>terrain-vars.lisp
DISTANCE
>map>utilities.lisp
GET-NEIGHBOR-QUAD-ROADS
>saf>cm>road-routes.lisp
Called by: GET-ROAD-POINT
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.5 FIND-NEAREST-ROAD-SEGMENT

Definition 5

>saf>cm>road-routes.lisp
Type: Function
Arguments: (X-WC Y-WC &OPTIONAL (QUAD-TREE *QUAD-TREE*))
Outputs:
Calls: *ROAD-SEGMENT-ARRAY*
>map>terrain-vars.lisp
QUAD-TREE
>map>terrain-vars.lisp
DISTANCE
>map>utilities.lisp
CLIP
>map>clip.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
GET-NEIGHBOR-QUAD-ROADS
>saf>cm>road-routes.lisp
PARALLEL-DISTANCE
>saf>cm>road-routes.lisp
ROUTE-INTERSECTION
>saf>cm>road-routes.lisp

Called by: GET-ROAD-SEGMENT-POINT
>saf>cm>road-routes.lisp
GET-ROAD-POINT
>saf>cm>road-routes.lisp

Description: None

2.2.4.4.6 GET-NEIGHBOR-QUAD-ROADS

Definition 6

>saf>cm>road-routes.lisp
Type: Function
Arguments: (X-WC Y-WC &OPTIONAL (INTERSECTIONS NIL) (QUAD-TREE *QUAD-TREE*))
Outputs:
Calls: *QUAD-TREE*
>map>terrain-vars.lisp
GET-QUAD-NODES
>map>quadtree-search.lisp
Called by: FIND-NEAREST-BRIDGE
>saf>cm>road-routes.lisp
FIND-NEAREST-ROAD-SEGMENT
>saf>cm>road-routes.lisp
FIND-NEAREST-INTERSECTION
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.7 CALCULATE-POINT-LINE-INTERSECTION

Definition 7

>saf>cm>road-routes.lisp
Type: Function
Arguments: (X1 Y1 X2 Y2 X Y)
Outputs:
Calls: NEAR
>map>utilities.lisp
POINT-LINE-INTERSECTION
>map>intersection.lisp
Called by: ROUTE-INTERSECTION
>saf>cm>road-routes.lisp
PARALLEL-DISTANCE
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.8 PARALLEL-DISTANCE

Definition 8

>saf>cm>road-routes.lisp
Type: Function
Arguments: (X1 Y1 X2 Y2 X Y)
Outputs:

Calls: DISTANCE
>map>utilities.lisp
CALCULATE-POINT-LINE-INTERSECTION
>saf>cm>road-routes.lisp
Called by: FIND-NEAREST-ROAD-SEGMENT
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.9 ROUTE-INTERSECTION

Definition 9

>saf>cm>road-routes.lisp
Type: Function
Arguments: (SEGMENT INDEX X Y)
Outputs:
Calls: *ROAD-SEGMENT-ARRAY*
>map>terrain-vars.lisp
DISTANCE
>map>utilities.lisp
CALCULATE-POINT-LINE-INTERSECTION
>saf>cm>road-routes.lisp
Called by: FIND-NEAREST-ROAD-SEGMENT
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.10 WITHIN-CURSOR

Definition 10

>saf>cm>road-routes.lisp
Type: Function
Arguments: (DISTANCE)
Outputs:
Calls: *PVD-DISPLAY*
>saf>sys>vars.lisp
Called by: GET-ROAD-POINT
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.11 EXPAND-ROUTE

Definition 11

>saf>cm>road-routes.lisp
Type: Function
Arguments: (PREV-ITEM ITEM &OPTIONAL FORCE)
Outputs:
Calls: EXPAND-ROAD-ROUTE
>saf>cm>road-routes.lisp
Called by: (METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD DELETE-POINT ROUTE)

```
>saf>cm>route.lisp  
(METHOD MOVE-POINT ROUTE)  
>saf>cm>route.lisp  
GET-BRIDGE-POINTS  
>saf>cm>road-routes.lisp  
GET-ROAD-ROUTE  
>saf>cm>road-routes.lisp
```

Description: None

2.2.4.4.12 EXPAND-ROAD-ROUTE

Definition 12

```
>saf>cm>road-routes.lisp  
Type: Function  
Arguments: (PREV-ITEM ITEM)  
Outputs:  
Calls: *OPFOR-IO*  
>saf>sys>vars.lisp  
SAY  
>saf>sys>macros.lisp  
ROUTE  
>saf>cm>route.lisp  
FIND-ROUTE  
>saf>cm>route-finder.lisp  
FIND-ROAD-INTERSECTIONS  
>saf>cm>road-routes.lisp  
FIND-SHORTEST-ROUTE  
>saf>cm>road-routes.lisp  
FIND-ROAD-DIRECTION  
>saf>cm>road-routes.lisp  
ROAD-SEGMENTS-FROM-INTERSECTIONS  
>saf>cm>road-routes.lisp  
ROUTE  
>saf>cm>route.lisp  
ROUTE  
>saf>cm>route.lisp  
Called by: DRAW-EXPANDED-ROUTE-CORE  
>saf>cm>road-routes.lisp  
EXPAND-ROUTE  
>saf>cm>road-routes.lisp
```

Description: None

2.2.4.4.13 FIND-ROAD-INTERSECTIONS

Definition 13

```
>saf>cm>road-routes.lisp  
Type: Function  
Arguments: (ROAD-INDEX)  
Outputs:  
Calls: *ROAD-INTERSECTION-ARRAY*  
>map>terrain-vars.lisp  
Called by: EXPAND-ROAD-ROUTE  
>saf>cm>road-routes.lisp  
Description: None
```

2.2.4.4.14 FIND-SHORTEST-ROUTE

Definition 14

>saf>cm>road-routes.lisp

Type: Function

Arguments: (&REST ROUTES)

Outputs:

Calls: ROUTE

>saf>cm>route.lisp

CALCULATE-ROUTE-DISTANCE

>saf>cm>road-routes.lisp

ROUTE

>saf>cm>route.lisp

ROUTE

>saf>cm>route.lisp

Called by: EXPAND-ROAD-ROUTE

>saf>cm>road-routes.lisp

Description: None

2.2.4.4.15 CALCULATE-ROUTE-DISTANCE

Definition 15

>saf>cm>road-routes.lisp

Type: Function

Arguments: (INTERSECTION-LIST)

Outputs:

Calls: *ROAD-SEGMENT-ARRAY*

>map>terrain-vars.lisp

ROAD-INTERSECTION-ARRAY

>map>terrain-vars.lisp

CALCULATE-ROUTE-DISTANCE

>saf>cm>road-routes.lisp

Called by: CALCULATE-ROUTE-DISTANCE

>saf>cm>road-routes.lisp

FIND-SHORTEST-ROUTE

>saf>cm>road-routes.lisp

Description: None

2.2.4.4.16 FIND-ROAD-DIRECTION

Definition 16

>saf>cm>road-routes.lisp

Type: Function

Arguments: (PREV-ITEM ITEM)

Outputs:

Calls: *ROAD-SEGMENT-ARRAY*

>map>terrain-vars.lisp

Called by: EXPAND-ROAD-ROUTE

>saf>cm>road-routes.lisp

Description: None

2.2.4.4.17 ROAD-SEGMENTS-FROM-INTERSECTIONS

Definition 17

>saf>cm>road-routes.lisp
Type: Function
Arguments: (PREV-ITEM ITEM ROUTE)
Outputs:
Calls: *ROAD-SEGMENT-ARRAY*
>map>terrain-vars.lisp
ROAD-INTERSECTION-ARRAY
>map>terrain-vars.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
Called by: EXPAND-ROAD-ROUTE
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.18 DRAW-EXPANDED-ROUTE

Definition 18

>saf>cm>road-routes.lisp
Type: Function
Arguments: (PREV-POINT ROAD-POINT STREAM ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
DRAW-EXPANDED-ROUTE-CORE
>saf>cm>road-routes.lisp
Called by: GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.19 DRAW-EXPANDED-ROUTE-CORE

Definition 19

>saf>cm>road-routes.lisp
Type: Function
Arguments: (PREV-POINT ROAD-POINT STREAM ALU)
Outputs:

Calls: *ROAD-SEGMENT-ARRAY*
>map>terrain-vars.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
EXPAND-ROAD-ROUTE
>saf>cm>road-routes.lisp
Called by: MAKE-ROUTE
>saf>cm>route.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD DELETE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD PAINT ROUTE)
>saf>cm>route.lisp
DRAW-EXPANDED-ROUTE
>saf>cm>road-routes.lisp

Description: None

2.2.4.4.20 GET-BRIDGE-ROUTE

Definition 20

>saf>cm>road-routes.lisp
Type: Function
Arguments: (PREV-POINT STREAM)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
SCREEN-TO-WORLD
>map>utilities.lisp
OPFOR-IO
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
GET-BRIDGE-ROUTE
>saf>cm>road-routes.lisp
GET-BRIDGE-POINTS
>saf>cm>road-routes.lisp
FIND-NEAREST-BRIDGE
>saf>cm>road-routes.lisp
Called by: MAKE-ROUTE
>saf>cm>route.lisp
GET-BRIDGE-ROUTE
>saf>cm>road-routes.lisp
Description: None

2.2.4.4.21 GET-BRIDGE-POINTS

Definition 21

>saf>cm>road-routes.lisp

Type: Function

Arguments: (BRIDGE PREV-POINT STREAM)

Outputs:

Calls: *ROAD-SEGMENT-ARRAY*

>map>terrain-vars.lisp

ROAD-INTERSECTION-ARRAY

>map>terrain-vars.lisp

DISTANCE

>map>utilities.lisp

FIND-INTER-POINT

>map>vectors.lisp

REVERSE-XY

>saf>cm>control-measure.lisp

EXPAND-ROUTE

>saf>cm>road-routes.lisp

MOUSE-ON-BRIDGE-APPROACH-POINT

>saf>cm>road-routes.lisp

SEGMENT-THRU-WATER

>saf>cm>water-check.lisp

Called by: GET-BRIDGE-ROUTE

>saf>cm>road-routes.lisp

Description: None

2.2.4.4.22 MOUSE-ON-BRIDGE-APPROACH-POINT

Definition 22

>saf>cm>road-routes.lisp

Type: Function

Arguments: (STREAM)

Outputs:

Calls: SINGLE-POINT

>map>control.lisp

OPFOR-IO

>saf>sys>vars.lisp

SAY

>saf>sys>macros.lisp

POINT

>saf>interface>model-menu.lisp

POINT

>saf>interface>model-menu.lisp

Called by: GET-BRIDGE-POINTS

>saf>cm>road-routes.lisp

Description: None

2.2.4.4.23 FIND-NEAREST-BRIDGE

Definition 23

>saf>cm>road-routes.lisp

Type: Function

Arguments: (X-WC Y-WC STREAM &OPTIONAL (THRESHOLD (MAX (/ 10
(WINDOW-SCALE STREAM)) 100))
(QUAD-TREE *QUAD-TREE*))

Outputs:

Calls: *ROAD-SEGMENT-ARRAY*

>map>terrain-vars.lisp

QUAD-TREE

>map>terrain-vars.lisp

DISTANCE

>map>utilities.lisp

GET-NEIGHBOR-QUAD-ROADS

>saf>cm>road-routes.lisp

Called by: GET-BRIDGE-ROUTE

>saf>cm>road-routes.lisp

Description: None

2.2.4.5 CSU cm>route-finder.lisp

This unit contains the routines that determine the shortest road path between any two road points. An A* algorithm is used to generate this path; A* algorithms are discussed in most introductory AI texts, such as Winston's Artificial Intelligence, chapter 4, p. 115. These routines are used by the road route expansion routines.

2.2.4.5.1 'FIND-ROUTE

Definition 1

>saf>cm>route-finder.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.2.4.5.2 FIND-ROUTE

Definition 2

>saf>cm>route-finder.lisp

Type: Function

Arguments: (FROM-INTERSECTION TO-INTERSECTION &KEY (MAX-DISTANCE 25000) (EXPAND T))

Outputs:

Calls: *ROAD-INTERSECTION-ARRAY*
>map>terrain-vars.lisp
EXPAND-FIRST-ROUTE
>saf>cm>route-finder.lisp
SORT-ROUTE-QUEUE
>saf>cm>route-finder.lisp
DISTANCE-BETWEEN-INTERSECTIONS
>saf>cm>route-finder.lisp
EXPAND-ROUTE-INTO-POINTS
>saf>cm>route-finder.lisp

Called by: EXPAND-ROAD-ROUTE
>saf>cm>road-routes.lisp

Description: None

2.2.4.5.3 EXPAND-FIRST-ROUTE

Definition 3

>saf>cm>route-finder.lisp

Type: Function

Arguments: (ROUTE-QUEUE TO-INTERSECTION)

Outputs:

Calls: *ROAD-SEGMENT-ARRAY*

>map>terrain-vars.lisp
ROAD-INTERSECTION-ARRAY
>map>terrain-vars.lisp
DISTANCE-BETWEEN-INTERSECTIONS
>saf>cm>route-finder.lisp

Called by: FIND-ROUTE
>saf>cm>route-finder.lisp

Description: None

2.2.4.5.4 SORT-ROUTE-QUEUE

Definition 4

>saf>cm>route-finder.lisp

Type: Function

Arguments: (QUEUE MAX-DISTANCE)

Outputs:

Calls: PARTIAL-SORT

>saf>cm>route-finder.lisp

Called by: FIND-ROUTE
>saf>cm>route-finder.lisp

Description: None

2.2.4.5.5 PARTIAL-SORT

Definition 5

>saf>cm>route-finder.lisp

Type: Function

Arguments: (SEQ)

Outputs:

Calls: FIND-SHORTEST
 >saf>cm>route-finder.lisp
Called by: SORT-ROUTE-QUEUE
 >saf>cm>route-finder.lisp
Description: None

2.2.4.5.6 FIND-SHORTEST

Definition 6

 >saf>cm>route-finder.lisp
Type: Function
Arguments: (SEQ)
Outputs:
Calls: FIND-SHORTEST
 >saf>cm>route-finder.lisp
Called by: FIND-SHORTEST
 >saf>cm>route-finder.lisp
 PARTIAL-SORT
 >saf>cm>route-finder.lisp
Description: None

2.2.4.5.7 TRIM-REDUNDANCY

Definition 7

 >saf>cm>route-finder.lisp
Type: Function
Arguments: (QUEUE FINAL-POINTS)
Outputs:
Calls: TRIM-REDUNDANCY
 >saf>cm>route-finder.lisp
Called by: TRIM-REDUNDANCY
 >saf>cm>route-finder.lisp
Description: None

2.2.4.5.8 DISTANCE-BETWEEN-INTERSECTIONS

Definition 8

 >saf>cm>route-finder.lisp
Type: Function
Arguments: (I0 I1)
Outputs:
Calls: *ROAD-INTERSECTION-ARRAY*
 >map>terrain-vars.lisp
 DISTANCE
 >map>utilities.lisp
Called by: EXPAND-FIRST-ROUTE
 >saf>cm>route-finder.lisp
 FIND-ROUTE
 >saf>cm>route-finder.lisp
Description: None

2.2.4.5.9 EXPAND-ROUTE-INTO-POINTS

Definition 9

```
>saf>cm>route-finder.lisp
Type: Function
Arguments: (INTERSECTION-LIST)
Outputs:
Calls: *ROAD-SEGMENT-ARRAY*
      >map>terrain-vars.lisp
      *ROAD-INTERSECTION-ARRAY*
      >map>terrain-vars.lisp
      NEAR
      >map>utilities.lisp
      *OPFOR-IO*
      >saf>sys>vars.lisp
      SAY
      >saf>sys>macros.lisp
      REVERSE-XY
      >saf>cm>control-measure.lisp
      EXPAND-ROUTE-INTO-POINTS
      >saf>cm>route-finder.lisp
Called by: EXPAND-ROUTE-INTO-POINTS
          >saf>cm>route-finder.lisp
          FIND-ROUTE
          >saf>cm>route-finder.lisp
```

Description: None

2.2.4.6 CSU cm>route.lisp

This unit contains the definition of the route control measure structure, as well as the routines to manipulate and display them. Like other control measures, the route object has an associated behavior object, route-behavior, as well as make-behavior and review-data methods. Other methods permit routes to be drawn and erased. Each route instance includes a list of route-points in its *points* slot. Route methods permit these points to be moved, deleted and inserted before or after existing points. The function make-route is the top-level code that presents menu options to the user for creating various kinds of routes, including air routes, cross-country routes, road routes, and bridge crossings. It calls route construction functions such as get-road-route and get-bridge-route.

The route control measure differs from other control measures in that its geometrical structure may include more information than the positions of the control measure points of which it is composed. In addition to these points, the geometry of a road-route is also defined by the road paths from one road-point to the next. These paths are not represented by control measure points, but by lists of road segment indices, together with their traversal directions. These lists are placed in the expanded-route slot of the road-points that make up the route control measure instance.

Because of this extra geometrical data, the move-point, delete-point, insert-point-after, and insert-point-before methods for the route control measure are more complex than the corresponding methods for other control measures. In the other control measures, the movement, deletion and insertion of the control-measure points may require erasing and/or drawing of connecting lines. In the route control measure, connecting lines are replaced by connecting road-paths, and they have to be created before they can be drawn. Thus,

whenever a point is positioned, a call to expand-route (in CSU cm>road-routes.lisp) is made to find new connecting paths, which are then placed in the expanded-route slots of the appropriate road-points. These new paths are drawn by calls to draw-expanded-route-core. Old connecting paths are erased by similar calls, using an erase-alu instead of a draw-alu.

Cross-country routes must be checked for water-crossings as well, so the move-point and insert-point methods call check-route-segment, a route method that not only checks for water crossings, but gives the user an option to modify the route, using the water avoidance algorithms.

2.2.4.6.1 *ASK-USER*

Definition 1

>saf>cm>route.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD CHECK-ROUTE-SEGMENT ROUTE)
 >saf>cm>route.lisp
 (METHOD CHECK ROUTE)
 >saf>cm>route.lisp
 (METHOD INSERT-POINT-BEFORE ROUTE)
 >saf>cm>route.lisp
 (METHOD INSERT-POINT-AFTER ROUTE)
 >saf>cm>route.lisp
 (METHOD DELETE-POINT ROUTE)
 >saf>cm>route.lisp
 (METHOD MOVE-POINT ROUTE)
 >saf>cm>route.lisp
Description: None

2.2.4.6.2 ROUTE

Definition 2

>saf>cm>route.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF ROUTE) SUB-TASK ROUTE)
 No Source File Record
 (READ-INSTANCE-VARIABLE ROUTE SUB-TASK ROUTE)
 No Source File Record
 (LOCATE-INSTANCE-VARIABLE (LOCF ROUTE) CM-POINT-BEHAVIOR
ROUTE)
 No Source File Record
 (WRITE-INSTANCE-VARIABLE (SETF ROUTE) CM-POINT-BEHAVIOR
ROUTE)
 No Source File Record
 (READ-INSTANCE-VARIABLE ROUTE CM-POINT-BEHAVIOR ROUTE)

No Source File Record
(METHOD REEXECUTE-SUB-TASK SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD DISPLAY-SUB-TASKING SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD EXECUTE-SUB-TASK SUB-TASK)
>saf>ui>subordinate-tasking.lisp
(METHOD MAKE-INSTANCE SUB-TASK AFTER)
>saf>ui>subordinate-tasking.lisp
(METHOD COPY-BEHAVIOR CM-POINT-BEHAVIOR)
>saf>cm>point.lisp
(METHOD SEND-BEH-INFO CM-POINT-BEHAVIOR)
>saf>cm>point.lisp
(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)
>saf>ui>subordinate-tasking.lisp
MAKE-POINT-BEHAVIOR
>saf>cm>point.lisp
MAKE-ROUTE
>saf>cm>route.lisp
CM-ROUTE?
>saf>cm>route.lisp
FIND-ROUTE-AROUND-WATER
>saf>cm>water-avoidance.lisp
ROAD-SEGMENTS-FROM-INTERSECTIONS
>saf>cm>road-routes.lisp
FIND-SHORTEST-ROUTE
>saf>cm>road-routes.lisp
EXPAND-ROAD-ROUTE
>saf>cm>road-routes.lisp
SEND-EXECUTE-OVERLAY
>saf>network>commands.lisp
SEND-ROUTE
>saf>network>commands.lisp
SEND-POINT
>saf>network>commands.lisp
MAKE-ROUTE
>saf>cm>route.lisp
(METHOD COPY ROUTE)
>saf>cm>route.lisp
CM-ROUTE?
>saf>cm>route.lisp
SUB-TASK
>saf>ui>subordinate-tasking.lisp
CM-POINT-BEHAVIOR
>saf>cm>point.lisp

Description: None

2.2.4.6.3 CM-ROUTE?

Definition 3

>saf>cm>route.lisp
Type: Function
Arguments: (ROUTE)
Outputs:
Calls: ROUTE
>saf>cm>route.lisp
ROUTE

Called by: None

Description: None

2.2.4.6.4 ROUTE-BEHAVIOR

Definition 4

>saf>cm>route.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: STORABLE-MIXIN
>saf>objects>storable-mixin.lisp
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp

Called by: None

Description: None

2.2.4.6.5 (METHOD COPY-BEHAVIOR ROUTE-BEHAVIOR)

Definition 5

>saf>cm>route.lisp
Type: Method
Arguments: (CM)
Outputs:
Calls: None
Called by: None
Description: None

2.2.4.6.6 (METHOD MAKE-BEHAVIOR ROUTE)

Definition 6

>saf>cm>route.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.2.4.6.7 (METHOD MAKE-INSTANCE ROUTE AFTER)

Definition 7

>saf>cm>route.lisp
Type: Method
Arguments: (&REST INIT-ARGS)
Outputs:
Calls: None
Called by: None
Description: None

2.2.4.6.8 (METHOD INITIALIZE-POINTS ROUTE)

Definition 8

>saf>cm>route.lisp
Type: Method
Arguments: (POINT-LIST)
Outputs:
Calls: POINT
 >saf>interface>model-menu.lisp
 SAF
 >saf>ui>frame.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.4.6.9 (METHOD REVIEW-DATA ROUTE)

Definition 9

>saf>cm>route.lisp
Type: Method
Arguments: ()
Outputs:

Calls: None

Called by: None

Description: None

2.2.4.6.10 (METHOD PAINT-NAME ROUTE)

Definition 10

>saf>cm>route.lisp

Type: Method

Arguments: (STREAM ALU)

Outputs:

Calls: None

Called by: None

Description: None

2.2.4.6.11 (METHOD PAINT ROUTE)

Definition 11

>saf>cm>route.lisp

Type: Method

Arguments: (STREAM ALU)

Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE

>map>utilities.lisp

WITH-MAP-GRAFICS

>map>utilities.lisp

WITH-FAST-MAP-GRAFICS

>map>utilities.lisp

DRAW-EXPANDED-ROUTE-CORE

>saf>cm>road-routes.lisp

Called by: None

Description: None

2.2.4.6.12 (METHOD DRAW ROUTE)

Definition 12

>saf>cm>route.lisp

Type: Method

Arguments: (STREAM)

Outputs:

Calls: *OVERLAY-ALU*

>map>color-map.lisp

Called by: None

Description: None

2.2.4.6.13 (METHOD ERASE ROUTE)

Definition 13

>saf>cm>route.lisp

Type: Method

Arguments: (STREAM)

Outputs:

Calls: *ERASE-OVERLAY-ALU*
>map>color-map.lisp
Called by: None
Description: None

2.2.4.6.14 (METHOD ORTHOGONALIZE ROUTE)

Definition 14

>saf>cm>route.lisp
Type: Method
Arguments: ()
Outputs:
 >saf>interface>model-menu.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.4.6.15 (METHOD MOVE-POINT ROUTE)

Definition 15

>saf>cm>route.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-Graphics
 >map>utilities.lisp
 WITH-FAST-MAP-Graphics
 >map>utilities.lisp
 OVERLAY-ALU
 >map>color-map.lisp
 ERASE-OVERLAY-ALU
 >map>color-map.lisp
 SINGLE-POINT
 >map>control.lisp
 PVD-DISPLAY
 >saf>sys>vars.lisp
 POINT
 >saf>interface>model-menu.lisp
 GET-ROAD-POINT
 >saf>cm>road-routes.lisp
 EXPAND-ROUTE
 >saf>cm>road-routes.lisp
 DRAW-EXPANDED-ROUTE-CORE
 >saf>cm>road-routes.lisp
 ASK-USER
 >saf>cm>route.lisp
 POINT
 >saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.4.6.16 (METHOD DELETE-POINT ROUTE)

Definition 16

>saf>cm>route.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
POINT
>saf>interface>model-menu.lisp
EXPAND-ROUTE
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE-CORE
>saf>cm>road-routes.lisp
ASK-USER
>saf>cm>route.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None

Description: None

2.2.4.6.17 (METHOD INSERT-POINT-AFTER ROUTE)

Definition 17

>saf>cm>route.lisp
Type: Method
Arguments: (POINT &OPTIONAL XY PT-TYPE)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
SINGLE-POINT
>map>control.lisp

```
*PVD-DISPLAY*
>saf>sys>vars.lisp
MENU-CHOOSE
>saf>sys>utilities.lisp
POINT
>saf>interface>model-menu.lisp
SAF
>saf>ui>frame.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
GET-ROAD-SEGMENT-POINT
>saf>cm>road-routes.lisp
EXPAND-ROUTE
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE-CORE
>saf>cm>road-routes.lisp
*ASK-USER*
>saf>cm>route.lisp
POINT
>saf>interface>model-menu.lisp
```

Called by: None

Description: None

2.2.4.6.18 (METHOD INSERT-POINT-BEFORE ROUTE) Definition 18

```
>saf>cm>route.lisp
Type: Method
Arguments: (POINT)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
      >map>utilities.lisp
      WITH-MAP-Graphics
      >map>utilities.lisp
      WITH-FAST-MAP-Graphics
      >map>utilities.lisp
      *OVERLAY-ALU*
      >map>color-map.lisp
      *ERASE-OVERLAY-ALU*
      >map>color-map.lisp
      SINGLE-POINT
      >map>control.lisp
      *PVD-DISPLAY*
      >saf>sys>vars.lisp
      MENU-CHOOSE
      >saf>sys>utilities.lisp
      POINT
      >saf>interface>model-menu.lisp
      SAF
      >saf>ui>frame.lisp
```

CONTROL-MEASURE
>saf>cm>control-measure.lisp
CONTROL-MEASURE
>saf>cm>control-measure.lisp
GET-ROAD-SEGMENT-POINT
>saf>cm>road-routes.lisp
EXPAND-ROUTE
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE-CORE
>saf>cm>road-routes.lisp
ASK-USER
>saf>cm>route.lisp
POINT
>saf>interface>model-menu.lisp

Called by: None
Description: None

2.2.4.6.19 (METHOD CHECK ROUTE) Definition 19

>saf>cm>route.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *ASK-USER*
>saf>cm>route.lisp
Called by: None
Description: None

2.2.4.6.20 (METHOD CHECK-ROUTE-SEGMENT ROUTE) Definition 20

>saf>cm>route.lisp
Type: Method
Arguments: (P1 POINTS)
Outputs:
Calls: *OPFOR-IO*
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
MENU-CHOOSE
>saf>sys>utilities.lisp
SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
FIND-ROUTE-AROUND-WATER
>saf>cm>water-avoidance.lisp
ASK-USER
>saf>cm>route.lisp
Called by: None
Description: None

2.2.4.6.21 (METHOD SEND-CM-INFO ROUTE)

Definition 21

>saf>cm>route.lisp
Type: Method
Arguments: (BEH)
Outputs:
Calls: None
Called by: None
Description: None

2.2.4.6.22 (METHOD COPY ROUTE)

Definition 22

>saf>cm>route.lisp
Type: Method
Arguments: ()
Outputs:
Calls: NAME
 >saf>sysdcl.lisp
 POINT
 >saf>interface>model-menu.lisp
 ROUTE
 >saf>cm>route.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 ROUTE
 >saf>cm>route.lisp
 ROUTE
 >saf>cm>route.lisp
 POINT
 >saf>interface>model-menu.lisp
Called by: None
Description: None

2.2.4.6.23 ROUTE

Definition 23

>saf>cm>route.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF ROUTE) SUB-TASK ROUTE)
 No Source File Record
 (READ-INSTANCE-VARIABLE ROUTE SUB-TASK ROUTE)
 No Source File Record
 (LOCATE-INSTANCE-VARIABLE (LOCF ROUTE) CM-POINT-BEHAVIOR
ROUTE)
 No Source File Record

(WRITE-INSTANCE-VARIABLE (SETF ROUTE) CM-POINT-BEHAVIOR
ROUTE)

No Source File Record

(READ-INSTANCE-VARIABLE ROUTE CM-POINT-BEHAVIOR ROUTE)

No Source File Record

(METHOD REEXECUTE-SUB-TASK SUB-TASK)

>saf>ui>subordinate-tasking.lisp

(METHOD DISPLAY-SUB-TASKING SUB-TASK)

>saf>ui>subordinate-tasking.lisp

(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)

>saf>ui>subordinate-tasking.lisp

(METHOD EXECUTE-SUB-TASK SUB-TASK)

>saf>ui>subordinate-tasking.lisp

(METHOD MAKE-INSTANCE SUB-TASK AFTER)

>saf>ui>subordinate-tasking.lisp

(METHOD COPY-BEHAVIOR CM-POINT-BEHAVIOR)

>saf>cm>point.lisp

(METHOD SEND-BEH-INFO CM-POINT-BEHAVIOR)

>saf>cm>point.lisp

(METHOD CHOOSE-SUB-TASK-PARAMETERS SUB-TASK)

>saf>ui>subordinate-tasking.lisp

MAKE-POINT-BEHAVIOR

>saf>cm>point.lisp

MAKE-ROUTE

>saf>cm>route.lisp

CM-ROUTE?

>saf>cm>route.lisp

FIND-ROUTE-AROUND-WATER

>saf>cm>water-avoidance.lisp

ROAD-SEGMENTS-FROM-INTERSECTIONS

>saf>cm>road-routes.lisp

FIND-SHORTEST-ROUTE

>saf>cm>road-routes.lisp

EXPAND-ROAD-ROUTE

>saf>cm>road-routes.lisp

SEND-EXECUTE-OVERLAY

>saf>network>commands.lisp

SEND-ROUTE

>saf>network>commands.lisp

SEND-POINT

>saf>network>commands.lisp

MAKE-ROUTE

>saf>cm>route.lisp

(METHOD COPY ROUTE)

>saf>cm>route.lisp

CM-ROUTE?

>saf>cm>route.lisp

SUB-TASK

>saf>ui>subordinate-tasking.lisp

CM-POINT-BEHAVIOR

>saf>cm>point.lisp

Description: None

2.2.4.6.24 MAKE-ROUTE

Definition 24

>saf: cm>route.lisp
Type: Function
Arguments: (OVERLAY STREAM)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
RUBBER-LINE
>map>control.lisp
MENU-CHOOSE
>saf>sys>utilities.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
REVERSE-XY
>saf>cm>control-measure.lisp
XY-LIST-TO-ROUTE-POINTS
>saf>cm>route-point.lisp
GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE-CORE
>saf>cm>road-routes.lisp
GET-BRIDGE-ROUTE
>saf>cm>road-routes.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
ROUTE
>saf>cm>route.lisp
Called by: (METHOD ADD-NEW-CONTROL-MEASURE OVERLAY)
>saf>cm>overlay.lisp
Description: None

2.3 BATTLEMASTER CSC

The Battlemaster CSC implements the interface which the battlemaster uses to select and initialize the SAF forces. The battlemaster screen is password protected so that SAF commanders cannot create new forces on their own. The battlemaster screen is also used to connect the workstation to a simhost. The battlemaster interface allows the selection and placement of vehicles and units either by clicking on a location on the map display for tanks, IFVs, RWAs, and ADAs or by selecting an airport on the edge of the database for FWAs. Once the units the battlemaster wants to place under the control of this workstation have been selected, the battlemaster can choose to save away their positions, or to go ahead and create them on the simhost. Once the battlemaster creates the vehicles, the workstation automatically goes into the commander mode. In addition to the selection and placement of units, the battlemaster screen allows the battlemaster to recall previous selections, restore scenarios, designate whether the workstation display is in omniscient view or commander's view, set unit marksmanship, and designate the site-host address of the stealth providing the out-the-window view. The difference between recalling selections and scenarios is that selection files contain only the positions of units which have been selected (positioned) and stored, while scenarios are snapshots of positions of created vehicles and overlays, including their fuel and ammunition status parameters. Recalling a scenario will automatically cause the vehicles to be created and their status parameters restored, while recalling a selection only loads the vehicles into the battlemaster workspace. Figure 2.3-1 shows the sub-level CSCs of the Battlemaster CSC.

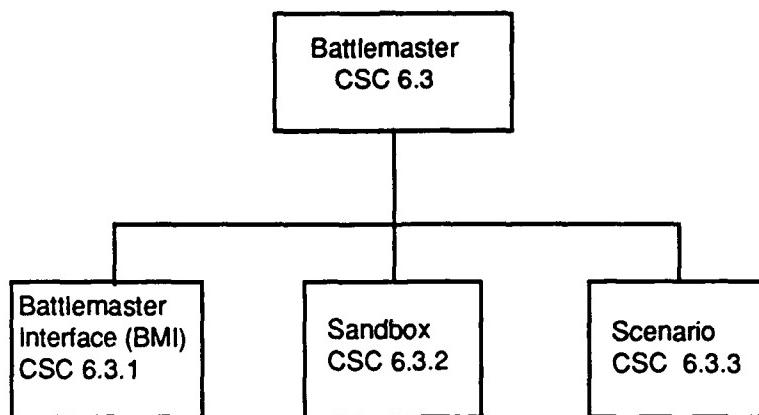


Figure 2.3-1 CSCs of the Battlemaster CSC

2.3.1 Battlemaster Interface (BMI) CSC

The BMI CSC defines the frame which comprises the battlemaster screen on the monochrome monitor. It also defines the menus which are used by the battlemaster to issue his commands. The BMI CSC contains the following CSUs:

```
bmi>bmi-frame.lisp csu  
bmi>commands.lisp csu  
bmi>utilities.lisp csu  
bmi>airport.lisp csu  
bmi>presentations-types.lisp csu
```

2.3.1.1 CSU bmi>bmi-frame.lisp

This unit contains the functions and data-structures used by the battlemaster screen. These include *bmi*, the battlemaster interface flavor, and a user-interface function, *accept-bmi-options*. This function allows the user to specify options for workstation and unit alignment, unit tactics, battle view, marksmanship, and the stealth vehicle site and host numbers. Other functions handle airport lists, display the FWA pane on the battlemaster screen, show connection to a Simhost (bmi method *Display-Connection-State*), and enable creation, storage and removal of sandbox objects.

2.3.1.1.1 BMI

Definition 1

>saf>bmi>bmi-frame.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.2 (METHOD ENABLE-MMSHIP-CHANGE BMI)

Definition 2

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.3 (METHOD SET-ENABLE-MMSHIP-CHANGE BMI)

Definition 3

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (ENABLE)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.4 WORKSTATION-MMSHIP-CHANGEP

Definition 4

>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: ()

Outputs:**Calls:** *BMI-PROGRAM*

>saf>sys>vars.lisp

Called by: (METHOD SPECIFY-RULES-OF-ENGAGEMENT GUNNER)

>saf>objects>gunner.lisp

Description: None**2.3.1.1.5 (METHOD WS-ALIGNMENT BMI)****Definition 5**

>saf>bmi>bmi-frame.lisp

Type: Method**Arguments:** ()**Outputs:****Calls:** None**Called by:** None**Description:** None**2.3.1.1.6 (METHOD SET-WS-ALIGNMENT BMI)****Definition 6**

>saf>bmi>bmi-frame.lisp

Type: Method**Arguments:** (ALIGN)**Outputs:****Calls:** None**Called by:** None**Description:** None**2.3.1.1.7 WORKSTATION-ALIGNMENT****Definition 7**

>saf>bmi>bmi-frame.lisp

Type: Function**Arguments:** ()**Outputs:****Calls:** *BMI-PROGRAM*

>saf>sys>vars.lisp

Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

(DEFUN-IN-FLAVOR ACCEPT-TACTICS-AND-TEAM BMI)

No Source File Record

MAKE-SANDBOX-OBJECT

>saf>sandbox>sandbox-object.lisp

CISS-FOR-CONTROL-MEASURE

>saf>sys>interim-model.lisp

Description: None

2.3.1.1.8 (METHOD BATTLE-VIEW BMI)

Definition 8

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.9 (METHOD SET-BATTLE-VIEW BMI)

Definition 9

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (VIEW)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.10 WORKSTATION-BATTLE-VIEW

Definition 10

>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *BMI-PROGRAM*
>saf>sys>vars.lisp
Called by: COM-OMNISCIENT-VIEW
>saf>objects>simnet-agent.lisp
COLOR-SCREEN-MENU
>saf>ui>mouse-interface.lisp
Description: None

2.3.1.1.11 (METHOD BATTLE-SCHEME BMI)

Definition 11

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.12 (METHOD SET-BATTLE-SCHEME BMI)

Definition 12

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (SCHEME)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.13 WORKSTATION-BATTLE-SCHEME

Definition 13

>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *BMI-PROGRAM*
 >saf>sys>vars.lisp
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
 >saf>bmi>bmi-frame.lisp
 (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
 >saf>bmi>bmi-frame.lisp
 (DEFUN-IN-FLAVOR ACCEPT-TACTICS-AND-TEAM BMI)
 No Source File Record
 ALIGNMENT-FROM-FORCE-ID
 >saf>bmi>bmi-frame.lisp
Description: None

2.3.1.1.14 *DEFAULT-BATTALION-NUMBER*

Definition 14

>saf>bmi>bmi-frame.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: LOAD-SCENARIO
 >saf>sys>new-storage.lisp
 STORE-SCENARIO
 >saf>sys>new-storage.lisp
 (METHOD DISPLAY-TITLE SUBORDINATE-UNIT-TASKING)
 >saf>ui>subordinate-tasking.lisp
 (METHOD TOP-LEVEL SAF)
 >saf>ui>frame.lisp
 (METHOD ACCEPT-BMI-OPTIONS BMI)
 >saf>bmi>bmi-frame.lisp
 GET-BATTALION-NUMBER
 >saf>bmi>bmi-frame.lisp
Description: None

2.3.1.1.15 GET-BATTALION-NUMBER

Definition 15

>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *DEFAULT-BATTALION-NUMBER*
>saf>bmi>bmi-frame.lisp
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
DISPLAY-WORKSTATION-BATTALION
>saf>ui>task-org.lisp
Description: None

2.3.1.1.16 (METHOD ACCEPT-BMI-OPTIONS BMI)

Definition 16

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (STREAM)
Outputs:
Calls: *VIEW-VEHICLE-ID*
>saf>sys>vars.lisp
STEALTH-SITE-NUMBER
>saf>sys>vars.lisp
STEALTH-HOST-NUMBER
>saf>sys>vars.lisp
DEFAULT-BATTALION-NUMBER
>saf>bmi>bmi-frame.lisp
BATTALION-BUMPER
>saf>bmi>presentation-types.lisp
Called by: None
Description: None

2.3.1.1.17 (METHOD AFTER-PROGRAM-FRAME-SELECTION-HANDLER BMI)

Definition 17

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (FRAME)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.18 (METHOD BMI-SANDBOX BMI)

Definition 18

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.19 (METHOD BMI-SET-SANDBOX BMI)

Definition 19

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (NEW-SANDBOX)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.20 (METHOD BMI-REMOVE-SANDBOX-OBJECT BMI)

Definition 20

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (OBJECT)
Outputs:
Calls: *PVD-DISPLAY*
 >saf>sys>vars.lisp
 ERASE-SANDBOX-OBJECT
 >saf>sandbox>sandbox-object.lisp
Called by: None
Description: None

2.3.1.1.21 (METHOD BMI-CLEAR-SANDBOX BMI)

Definition 21

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.22 (METHOD BMI-ADD-SANDBOX-OBJECT BMI)
Definition 22

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (OBJECT)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.23 (METHOD BMI-AIRPORTS BMI)
Definition 23

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.24 (METHOD BMI-SET-AIRPORTS BMI)
Definition 24

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (NEW-AIRPORTS)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.25 (METHOD BMI-ADD-AIRPORT BMI)
Definition 25

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (NEW-AIRPORT)
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.26 (METHOD FIND-AIRPORT BMI)
Definition 26

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (LOCATION)

Outputs:

Calls: None

Called by: None

Description: None

2.3.1.1.27 (METHOD DISPLAY-CONNECTION-STATE BMI)

Definition 27

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (&OPTIONAL (STREAM NIL))
Outputs:
Calls: *BMI-PROGRAM*
 >saf>sys>vars.lisp
 SIMULATION-HOST
 >saf>network>vars.lisp
 STANDALONEP
 >saf>network>connection.lisp
 NO-CONNECTION
 >saf>bmi>presentation-types.lisp
 CONNECTION
 >saf>bmi>presentation-types.lisp
Called by: None
Description: None

2.3.1.1.28 (METHOD CREATE-MOCK-UNITS BMI)

Definition 28

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: REALLY-MAKE-SANDBOX-OBJECT
 >saf>bmi>bmi-frame.lisp
Called by: None
Description: None

2.3.1.1.29 REALLY-MAKE-SANDBOX-OBJECT

Definition 29

>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: (OBJECT)
Outputs:
Calls: NEW-SBX-UNIQUE-UNIT-ID
 >saf>sys>vars.lisp
 ADD-SANDBOX-TO-ALIST
 >saf>sys>vars.lisp
 MAP-ECHELON-TO-NUMBER
 >saf>sys>interim-model.lisp
 MAP-ECHELON-TYPE-TO-NUMBER

```
>saf>sys>interim-model.lisp
CREATE
>saf>network>vars.lisp
NET-MSG
>saf>rudp>outgoing.lisp
RETURN-FORCE-AND-COUNTRY-D-AND-O
>saf>bmi>bmi-frame.lisp
Called by: (METHOD CREATE-MOCK-UNITS BMI)
>saf>bmi>bmi-frame.lisp
Description: None
```

2.3.1.1.30 RETURN-FORCE-AND-COUNTRY-D-AND-O

Definition 30

```
>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: (ALIGN)
Outputs:
Calls: ALIGNED-OFFENSE
       >saf>sys>vars.lisp
       ALIGNED-DEFENSE
       >saf>sys>vars.lisp
       ALIGNED-USSR
       >saf>sys>vars.lisp
       ALIGNED-US
       >saf>sys>vars.lisp
       COUNTRY-US
       >saf>sys>vars.lisp
       COUNTRY-USSR
       >saf>sys>vars.lisp
       DISTINGUISHED-FORCE
       >saf>sys>vars.lisp
       OTHER-FORCE
       >saf>sys>vars.lisp
Called by: CREATE-STORED-INSTANCE
          >saf>sys>new-storage.lisp
          REALLY-MAKE-SANDBOX-OBJECT
          >saf>bmi>bmi-frame.lisp
Description: None
```

2.3.1.1.31 ALIGNMENT-FROM-FORCE-ID

Definition 31

```
>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: (FORCE-ID)
Outputs:
Calls: ALIGNED-OFFENSE
       >saf>sys>vars.lisp
       ALIGNED-DEFENSE
       >saf>sys>vars.lisp
       ALIGNED-USSR
```

>saf>sys>vars.lisp
ALIGNED-US
>saf>sys>vars.lisp
COUNTRY-US
>saf>sys>vars.lisp
DISTINGUISHED-FORCE
>saf>sys>vars.lisp
WORKSTATION-BATTLE-SCHEME
>saf>bmi>bmi-frame.lisp
Called by: PROCESS-VEHICLE-PAE-PKT
>saf>rudp>handle-incoming.lisp
PROCESS-VEHICLE-APPEARANCE-PKT
>saf>rudp>handle-incoming.lisp
Description: None

2.3.1.1.32 (ACCEPT-TACTICS-AND-TEAM BMI)

Definition 32

>saf>bmi>bmi-frame.lisp
Type: DEFSUBST-IN-FLAVOR
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.33 ACCEPT-PARAMETER-FROM-SEQUENCE

Definition 33

>saf>bmi>bmi-frame.lisp
Type: Macro
Arguments: (PARAMETER SEQUENCE PROMPT STREAM &OPTIONAL
QUERYID)
Outputs:
Calls: ACCEPT-PARAMETER-FROM-SEQUENCE
>saf>bmi>bmi-frame.lisp
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
ACCEPT-PARAMETER-FROM-SEQUENCE
>saf>bmi>bmi-frame.lisp
Description: None

2.3.1.1.34 ALL-ECHELONS

Definition 34

>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: (TACTICS)

Outputs:

Calls: GET-VEHICLE-ECHELONS-AND-TYPES

>saf>sys>interim-model.lisp

Called by: (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

Description: None

2.3.1.1.35 GET-ECHELON-TYPES

Definition 35

>saf>bmi>bmi-frame.lisp

Type: Function

Arguments: (ECHELON TACTICS)

Outputs:

Calls: GET-VEHICLE-ECHELONS-AND-TYPES

>saf>sys>interim-model.lisp

Called by: (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

Description: None

2.3.1.1.36 BMI-FIND-FORMATIONS

Definition 36

>saf>bmi>bmi-frame.lisp

Type: Subst

Arguments: (ECHELON TYPE TACTICS)

Outputs:

Calls: FIND-FORMATIONS

>saf>sys>interim-model.lisp

Called by: (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

Description: None

2.3.1.1.37 (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)

Definition 37

>saf>bmi>bmi-frame.lisp

Type: Method

Arguments: (X Y BEARING &OPTIONAL (STREAM NIL))

Outputs:

Calls: π

>saf>sys>constants.lisp

2π

>saf>sys>constants.lisp

90DEG

>saf>sys>constants.lisp

RAD-TO-MIL

>saf>sys>constants.lisp

MIL-TO-RAD

>saf>sys>constants.lisp

RADIANS-COMPASS-TO-RADIANS-MATH

```
>saf>sys>macros.lisp
RADIANC-MATH-TO-RADIANS-COMPASS
>saf>sys>macros.lisp
RADIANC-COMPASS-TO-MILS
>saf>sys>macros.lisp
RADIANC-MATH-TO-MILS
>saf>sys>macros.lisp
MILS-TO-RADIANS-COMPASS
>saf>sys>macros.lisp
MILS-TO-RADIANS-MATH
>saf>sys>macros.lisp
FIND-FORMATIONS
>saf>sys>interim-model.lisp
OPFOR
>saf>network>vars.lisp
BLUEFOR
>saf>network>vars.lisp
*MARKSMAN*
>saf>objects>gunner.lisp
*COMPETENT*
>saf>objects>gunner.lisp
*NOVICE*
>saf>objects>gunner.lisp
VEHICLE
>saf>objects>vehicle.lisp
VEHICLE
>saf>objects>vehicle.lisp
WORKSTATION-ALIGNMENT
>saf>bmi>bmi-frame.lisp
WORKSTATION-BATTLE-SCHEME
>saf>bmi>bmi-frame.lisp
GET-BATTALION-NUMBER
>saf>bmi>bmi-frame.lisp
ACCEPT-PARAMETER-FROM-SEQUENCE
>saf>bmi>bmi-frame.lisp
ALL-ECHELONS
>saf>bmi>bmi-frame.lisp
GET-ECHELON-TYPES
>saf>bmi>bmi-frame.lisp
BMI-FIND-FORMATIONS
>saf>bmi>bmi-frame.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
CONVERT-UNIT-SIZE
>saf>bmi>utilities.lisp
CONVERT-ALIGNMENT
>saf>bmi>utilities.lisp
OPFOR-SYMBOL
>saf>bmi>utilities.lisp
MAYBE-LOAD-FORMATION-DATA
>saf>bmi>utilities.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
TACTICS
```

>saf>bmi>presentation-types.lisp
MILS
>saf>bmi>presentation-types.lisp
COMPANY-BUMPER
>saf>bmi>presentation-types.lisp
PLATOON-BUMPER
>saf>bmi>presentation-types.lisp

Called by: None
Description: None

2.3.1.1.38 FIND-ALL-FWA-ECHELONS

Definition 38

>saf>bmi>bmi-frame.lisp
Type: Function
Arguments: (TACTICS)
Outputs:
Calls: GET-VEHICLE-ECHELONS-AND-TYPES
 >saf>sys>interim-model.lisp
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
 >saf>bmi>bmi-frame.lisp
Description: None

2.3.1.1.39 (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)

Definition 39

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: (AIRPORT)
Outputs:
Calls: FIND-FORMATIONS
 >saf>sys>interim-model.lisp
 OPFOR
 >saf>network>vars.lisp
 BLUEFOR
 >saf>network>vars.lisp
 MARKSMAN
 >saf>objects>gunner.lisp
 COMPETENT
 >saf>objects>gunner.lisp
 NOVICE
 >saf>objects>gunner.lisp
 VEHICLE
 >saf>objects>vehicle.lisp
 VEHICLE
 >saf>objects>vehicle.lisp
 WORKSTATION-ALIGNMENT
 >saf>bmi>bmi-frame.lisp
 WORKSTATION-BATTLE-SCHEME
 >saf>bmi>bmi-frame.lisp
 GET-BATTALION-NUMBER

```
>saf>bmi>bmi-frame.lisp
ACCEPT-PARAMETER-FROM-SEQUENCE
>saf>bmi>bmi-frame.lisp
FIND-ALL-FWA-ECHELONS
>saf>bmi>bmi-frame.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
CONVERT-UNIT-SIZE
>saf>bmi>utilities.lisp
CONVERT-ALIGNMENT
>saf>bmi>utilities.lisp
OPFOR-SYMBOL
>saf>bmi>utilities.lisp
MAYBE-LOAD-FORMATION-DATA
>saf>bmi>utilities.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
TACTICS
>saf>bmi>presentation-types.lisp
COMPANY-BUMPER
>saf>bmi>presentation-types.lisp
PLATOON-BUMPER
>saf>bmi>presentation-types.lisp
```

Called by: None

Description: None

2.3.1.1.40 (METHOD DISPLAY-FWA-PANE BMI)

Definition 40

```
>saf>bmi>bmi-frame.lisp
```

Type: Method

Arguments: (FWA-PANE)

Outputs:

Calls: *QUAD-TREE*

```
>map>terrain-vars.lisp
```

```
MAKE-AIRPORTS
```

```
>saf>bmi>airport.lisp
```

Called by: None

Description: None

2.3.1.1.41 (METHOD DISPLAY-TOTALS-PANE BMI)

Definition 41

```
>saf>bmi>bmi-frame.lisp
```

Type: Method

Arguments: (STREAM)

Outputs:

Calls: SANDBOX-OBJECT

```
>saf>bmi>presentation-types.lisp
```

```
SANDBOX-OBJECT
```

```
>saf>bmi>presentation-types.lisp
```

Called by: None
Description: None

2.3.1.1.42 (METHOD REDISPLAY-TOTALS-PANE BMI)

Definition 42

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.1.43 (METHOD REDISPLAY-OPTIONS-PANE BMI)

Definition 43

>saf>bmi>bmi-frame.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2 CSU bmi>commands.lisp

This unit defines the menu and Command Processor (CP) commands used by the battlemaster screen. These include selecting, loading, saving and creating units, and the command that accepts the battlemaster password.

The symbolics function cp:define-command allows user-defined commands to be added to the CP command table; see the Symbolics manuals for details.

2.3.1.2.1 BATTLEMASTER-SCREEN-P

Definition 1

>saf>bmi>commands.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *OPFOR-FRAME*
 >saf>sys>vars.lisp
Called by: (METHOD COM-ADD-AIRCRAFT-INTERNAL SAF)
 No Source File Record
 (METHOD COM-CREATE-UNITS-INTERNAL SAF)
 No Source File Record
 (METHOD COM-LOAD-SELECTIONS-INTERNAL SAF)
 No Source File Record
 (METHOD COM-SAVE-SELECTIONS-INTERNAL SAF)

No Source File Record
(METHOD COM-RESTORE-EXERCISE-INTERNAL SAF)
No Source File Record
(METHOD COM-CLEAR-SELECTIONS-INTERNAL SAF)
No Source File Record
(METHOD COM-SELECT-UNITS-INTERNAL SAF)
No Source File Record
Description: None

2.3.1.2.2 (COM-SELECT-UNITS MENU-ACCELERATOR Select Units MENU-LEVEL BATTLEMASTER)

Definition 2

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.3 (COM-CLEAR-SELECTIONS MENU-ACCELERATOR Clear Selections MENU-LEVEL BATTLEMASTER)

Definition 3

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.4 (COM-RESTORE-EXERCISE MENU-ACCELERATOR Restore Exercise MENU-LEVEL BATTLEMASTER)

Definition 4

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.5 (COM-SAVE-SELECTIONS MENU-ACCELERATOR Save Selections MENU-LEVEL BATTLEMASTER)

Definition 5

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.6 (COM-LOAD-SELECTIONS MENU-ACCELERATOR Load Selections MENU-LEVEL BATTLEMASTER)

Definition 6

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.7 (COM-CREATE-UNITS MENU-ACCELERATOR Create Units MENU-LEVEL BATTLEMASTER)

Definition 7

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.8 (COM-SHOW-SANDBOX)

Definition 8

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.9 (COM-ADD-AIRCRAFT)

Definition 9

>saf>bmi>commands.lisp
Type: DEFINE-SAF-COMMAND
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.2.10 COM-BATTLEMASTER

Definition 10

>saf>bmi>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: *BATTLEMASTER-PASSWORD*
 >saf>sys>vars.lisp
Called by: None
Description: None

2.3.1.2.11 COM-COMMANDER

Definition 11

>saf>bmi>commands.lisp
Type: CP Command
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.3 CSU bmi>utilities.lisp

This unit contains a few utilities used by the battlemaster code, for retrieving a sandbox from disk, converting unit size and alignment, making sandbox objects, locating a suitable local file server, and loading formation data from a file server.

2.3.1.3.1 USER-CHOOSE

Definition 1

>saf>bmi>utilities.lisp
Type: Function
Arguments: (CHOICES LABEL &OPTIONAL (STYLE '(DUTCH BOLD LARGE)))
Outputs:
Calls: None

Called by: (PRESENTATION-MOUSE-HANDLER SANDBOX-OBJECT-GESTURE)

No Source File Record

(PRESENTATION-MOUSE-HANDLER MAKE-CONNECTION)

No Source File Record

RETRIEVE-A-SANDBOX

>saf>bmi>utilities.lisp

Description: None

2.3.1.3.2 RETRIEVE-A-SANDBOX

Definition 2

>saf>bmi>utilities.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *BMI-PROGRAM*

>saf>sys>vars.lisp

ACTIVE-SANBOXES

>saf>sys>vars.lisp

DRAW-SANDBOX

>saf>sandbox>sandbox.lisp

ERASE-SANDBOX

>saf>sandbox>sandbox.lisp

ALL-SANBOXES-AS-MENU-ITEMS

>saf>sandbox>utilities.lisp

USER-CHOOSE

>saf>bmi>utilities.lisp

Called by: (METHOD COM-LOAD-SELECTIONS-INTERNAL SAF)

No Source File Record

Description: None

2.3.1.3.3 CONVERT-UNIT-SIZE

Definition 3

>saf>bmi>utilities.lisp

Type: Function

Arguments: (UNIT-SIZE)

Outputs:

Calls: SAF

>saf>ui>frame.lisp

Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

Description: None

2.3.1.3.4 CONVERT-ALIGNMENT

Definition 4

>saf>bmi>utilities.lisp
Type: Function
Arguments: (ALIGNMENT)
Outputs:
Calls: SAF
 >saf>ui>frame.lisp
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
 >saf>bmi>bmi-frame.lisp
 (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
 >saf>bmi>bmi-frame.lisp
Description: None

2.3.1.3.5 BMI-MAKE-SANDBOX-OBJECT

Definition 5

>saf>bmi>utilities.lisp
Type: Function
Arguments: (X Y BEARING)
Outputs:
Calls: *BMI-PROGRAM*
 >saf>sys>vars.lisp
Called by: (METHOD COM-SELECT-UNITS-INTERNAL SAF)
 No Source File Record
Description: None

2.3.1.3.6 OPFOR-SYMBOL

Definition 6

>saf>bmi>utilities.lisp
Type: Function
Arguments: (SYMBOL)
Outputs:
Calls: SAF
 >saf>ui>frame.lisp
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
 >saf>bmi>bmi-frame.lisp
 (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
 >saf>bmi>bmi-frame.lisp
Description: None

2.3.1.3.7 FIND-GOOD-LOCAL-FILE-SERVER

Definition 7

>saf>bmi>utilities.lisp
Type: Function
Arguments: ()

Outputs:**Calls:** None**Called by:** MAYBE-LOAD-FORMATION-DATA
>saf>bmi>utilities.lisp**Description:** None**2.3.1.3.8 MAYBE-LOAD-FORMATION-DATA****Definition 8**

>saf>bmi>utilities.lisp

Type: Function**Arguments:** (&OPTIONAL (HOST (FIND-GOOD-LOCAL-FILE-SERVER)))**Outputs:****Calls:** GET-FORMATION-DATA

>saf>sys>interim-model.lisp

SAF

>saf>ui>frame.lisp

FIND-GOOD-LOCAL-FILE-SERVER

>saf>bmi>utilities.lisp

Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)

>saf>bmi>bmi-frame.lisp

Description: None**2.3.1.4 CSU bmi>airport.lisp**

This unit contains the data-structures and routines that implement the off-database airport concept. This allows aircraft to be created at airports that are located off the terrain. Off-terrain airports are located at 8 points of the compass, with a rectangular offset of 2500 meters from the terrain rectangle. These locations are shown at the left of the battlemaster screen. Lisp forms in this unit define the airport flavor, methods for creating and drawing airports, and functions to add airports to the battlemaster interface.

2.3.1.4.1 AIRPORT-DATA**Definition 1**

>saf>bmi>airport.lisp

Type: Function**Arguments:** (TERRAIN-X-EXTENT TERRAIN-Y-EXTENT)**Outputs:****Calls:** None**Called by:** MAKE-AIRPORTS

>saf>bmi>airport.lisp

Description: None

2.3.1.4.2 DRAW-AIRPORT-LOCATION

Definition 2

>saf>bmi>airport.lisp

Type: Function

Arguments: (LOCATION XE YE N)

Outputs:

Calls: None

Called by: (METHOD DRAW AIRPORT)

>saf>bmi>airport.lisp

Description: None

2.3.1.4.3 AIRPORT

Definition 3

>saf>bmi>airport.lisp

Type: Flavor

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.3.1.4.4 (METHOD MAKE-INSTANCE AIRPORT AFTER)

Definition 4

>saf>bmi>airport.lisp

Type: Method

Arguments: (&REST INIT-ARGS)

Outputs:

Calls: None

Called by: None

Description: None

2.3.1.4.5 (METHOD DRAW AIRPORT)

Definition 5

>saf>bmi>airport.lisp

Type: Method

Arguments: (XE YE N STREAM)

Outputs:

Calls: DRAW-AIRPORT-LOCATION

>saf>bmi>airport.lisp

AIRPORT

>saf>bmi>presentation-types.lisp

Called by: None

Description: None

2.3.1.4.6 (METHOD MAKE-FWA-SANDBOX-OBJECT AIRPORT)

Definition 6

>saf>bmi>airport.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.4.7 MAKE-AIRPORT

Definition 7

>saf>bmi>airport.lisp
Type: Function
Arguments: (DATA)
Outputs:
Calls: AIRPORT
 >saf>bmi>presentation-types.lisp
Called by: MAKE-AIRPORTS
 >saf>bmi>airport.lisp
Description: None

2.3.1.4.8 MAKE-AIRPORTS

Definition 8

>saf>bmi>airport.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *QUAD-TREE*
 >map>terrain-vars.lisp
 AIRPORT-DATA
 >saf>bmi>airport.lisp
 MAKE-AIRPORT
 >saf>bmi>airport.lisp
Called by: (METHOD DISPLAY-FWA-PANE BMI)
 >saf>bmi>bmi-frame.lisp
Description: None

2.3.1.5 CSU bmi>presentation-types.lisp

This unit defines presentation types, actions, and command translators for the battlemaster screen. These presentations create mouse-sensitive regions for handling connection state, airports, tactics and simnet team, and sandbox objects.

See the Symbolics manuals for more information on functions such as *define-presentation-type* and *define-presentation-action*.

2.3.1.5.1 NO-CONNECTION

Definition 1

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER MAKE-CONNECTION)
No Source File Record
(METHOD DISPLAY-CONNECTION-STATE BMI)
>saf>bmi>bmi-frame.lisp
(PROPERTY NO-CONNECTION DEFTYPE)
No Source File Record
Description: None

2.3.1.5.2 MAKE-CONNECTION

Definition 2

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-ACTION
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.5.3 CONNECTION

Definition 3

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER END-CONNECTION)
No Source File Record
SAF PROGRAM-FRAME-OPTIONS
>saf>ui>frame.lisp
(METHOD DISPLAY-CONNECTION-STATE BMI)
>saf>bmi>bmi-frame.lisp
(PROPERTY CONNECTION DEFTYPE)
No Source File Record
Description: None

2.3.1.5.4 END-CONNECTION

Definition 4

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-ACTION
Arguments: ()

Outputs:**Calls:** None**Called by:** None**Description:** None**2.3.1.5.5 AIRPORT****Definition 5**

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PRESENTATION-MOUSE-HANDLER ADD-AIRCRAFT)
 No Source File Record
 (METHOD COM-ADD-AIRCRAFT-PARSER SAF)
 No Source File Record
 MAKE-AIRPORT
 >saf>bmi>airport.lisp
 (METHOD DRAW AIRPORT)
 >saf>bmi>airport.lisp
Description: None

2.3.1.5.6 ADD-AIRCRAFT**Definition 6**

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TO-COMMAND-TRANSLATOR
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.5.7 SANDBOX-OBJECT**Definition 7**

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF SANDBOX-OBJECT)
 SIMNET-AGENT SANDBOX-OBJECT)
 No Source File Record
 (READ-INSTANCE-VARIABLE SANDBOX-OBJECT SIMNET-AGENT
 SANDBOX-OBJECT)
 No Source File Record
 (PRESENTATION-MOUSE-HANDLER SANDBOX-OBJECT-GESTURE)
 No Source File Record
 CREATE-STORED-INSTANCE
 >saf>sys>new-storage.lisp

FILTERED-SAVE-INSTANCE
>saf>sys>new-storage.lisp
MAKE-AGENT
>saf>simnet-objects>vehicle-tracking.lisp
(METHOD DISPLAY-TOTALS-PANE BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
DRAW-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp
COPY-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp
(PROPERTY SANDBOX-OBJECT NAMED-STRUCTURE-Invoke)
No Source File Record
SANDBOX-OBJECT-P
>saf>sandbox>sandbox-object.lisp
MAKE-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp
FIND-FORMATION-INFO
>saf>sandbox>sandbox.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp

Description: None

2.3.1.5.8 SANDBOX-OBJECT-GESTURE

Definition 8

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-ACTION
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.1.5.9 TACTICS

Definition 9

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF TACTICS) SIMNET-AGENT
TACTICS)
No Source File Record
(READ-INSTANCE-VARIABLE TACTICS SIMNET-AGENT TACTICS)
No Source File Record
(METHOD UPDATE-APPEARANCE SIMNET-AGENT)
>saf>objects>simnet-agent.lisp

(METHOD GET-TEMPLATE SIMNET-AGENT)
>saf>objects>simnet-agent.lisp
(METHOD MAKE-UNIT-NAME SIMNET-NAME-MIXIN)
>saf>objects>simnet-name-mixin.lisp
(METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(DEFUN-IN-FLAVOR ACCEPT-TACTICS-AND-TEAM BMI)
No Source File Record
(PROPERTY TACTICS DEFTYPE)
No Source File Record
SIMNET-AGENT
>saf>objects>simnet-agent.lisp

Description: None

2.3.1.5.10 SIMNET-TEAM

Definition 10

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (PROPERTY SIMNET-TEAM DEFTYPE)
No Source File Record
Description: None

2.3.1.5.11 MILS

Definition 11

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(PROPERTY MILS DEFTYPE)
No Source File Record
Description: None

2.3.1.5.12 BATTALION-BUMPER

Definition 12

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None

Called by: (METHOD ACCEPT-BMI-OPTIONS BMI)
>saf>bmi>bmi-frame.lisp
(PROPERTY BATTALION-BUMPER DEFTYPE)
No Source File Record
Description: None

2.3.1.5.13 COMPANY-BUMPER

Definition 13

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(PROPERTY COMPANY-BUMPER DEFTYPE)
No Source File Record
Description: None

2.3.1.5.14 PLATOON-BUMPER

Definition 14

>saf>bmi>presentation-types.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(PROPERTY PLATOON-BUMPER DEFTYPE)
No Source File Record
Description: None

2.3.2 Sandbox CSC

This CSC contains the code required to save away the units and positions which have been selected in battlemaster mode but not created. By means of this code a battlemaster can select and position his units without being connected to a simulation host. He can save these units away in a file for future use. This CSC contains the following CSUs:

sandbox>sandbox.lisp csu
sandbox>sandbox-object.lisp csu
sandbox>utilities.lisp csu

2.3.2.1 CSU sandbox>sandbox.lisp

This unit contains the sandbox data-structure and its associated functions.

The sandbox construct gives the battlemaster a place to put selected units, change their positions, save and retrieve them, etc., before actually creating them on the PVD.

Functions in this unit allow for copying, displaying, and saving sandbox structures.

Because data about the formation of a unit is not part of the SAF command protocol, this information is cached on the workstation when units are created on the Simhost. The way RUDP works, there is a period of time when a unit-creation message has been sent to the Simhost, but an acknowledgement has not yet been received; this is the interval during which formation data has to be cached. Once an acknowledgement is received, the unit entity is created on the Symbolics, and the formation data is recorded there; at this point the cached data is no longer needed. The functions *formation-cache-entry*, *cache-formation-data*, and *find-formation-info* allow formation data to be stored and retrieved as required.

2.3.2.1.1 SANDBOX

Definition 1:

>saf>sandbox>sandbox.lisp
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD COM-CREATE-UNITS-INTERNAL SAF)
No Source File Record
(METHOD COM-CLEAR-SELECTIONS-INTERNAL SAF)
No Source File Record
(METHOD MAKE-INSTANCE SAF AFTER)
>saf>ui>frame.lisp
COPY-SANDBOX
>saf>sandbox>sandbox.lisp
(PROPERTY SANDBOX NAMED-STRUCTURE-Invoke)
No Source File Record
SANDBOX-P
>saf>sandbox>sandbox.lisp
MAKE-SANDBOX
>saf>sandbox>sandbox.lisp
Description: None

2.3.2.1.2 COPY-SANDBOX

Definition 2

>saf>sandbox>sandbox.lisp
Type: Function
Arguments: (SANDBOX)
Outputs:

Calls: **SANDBOX**
 >saf>sandbox>sandbox.lisp
 COPY-SANDBOX-OBJECT
 >saf>sandbox>sandbox-object.lisp
Called by: None
Description: None

2.3.2.1.3 DRAW-SANDBOX

Definition 3

 >saf>sandbox>sandbox.lisp
Type: Function
Arguments: (**SANDBOX**)
Outputs:
Calls: **DRAW-SANDBOX-OBJECT**
 >saf>sandbox>sandbox-object.lisp
Called by: **DRAW-MAP**
 >saf>sys>update-process.lisp
 RETRIEVE-A-SANDBOX
 >saf>bmi>utilities.lisp
Description: None

2.3.2.1.4 ERASE-SANDBOX

Definition 4

 >saf>sandbox>sandbox.lisp
Type: Function
Arguments: (**SANDBOX**)
Outputs:
Calls: **ERASE-SANDBOX-OBJECT**
 >saf>sandbox>sandbox-object.lisp
Called by: (**METHOD COM-CREATE-UNITS-INTERNAL SAF**)
 No Source File Record
 (**METHOD COM-CLEAR-SELECTIONS-INTERNAL SAF**)
 No Source File Record
 RETRIEVE-A-SANDBOX
 >saf>bmi>utilities.lisp
Description: None

2.3.2.1.5 STORE-SANDBOX

Definition 5

 >saf>sandbox>sandbox.lisp
Type: Function
Arguments: (**SANDBOX**)
Outputs:
Calls: ***ACTIVE-SANBOXES***
 >saf>sys>vars.lisp
 WRITE-SANDBOX
 >saf>sandbox>sandbox.lisp
Called by: (**METHOD COM-SAVE-SELECTIONS-INTERNAL SAF**)
 No Source File Record
Description: None

2.3.2.1.6 WRITE-SANDBOX

Definition 6

>saf>sandbox>sandbox.lisp
Type: Function
Arguments: (SANDBOX)
Outputs:
Calls: OPFOR-CHOOSE-VARIABLE-VALUES
 >saf>sys>cl-tv-patches.lisp
Called by: STORE-SANDBOX
 >saf>sandbox>sandbox.lisp
Description: None

2.3.2.1.7 FORMATION-CACHE-ENTRY

Definition 7

>saf>sandbox>sandbox.lisp
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: CACHE-FORMATION-INFO
 >saf>sandbox>sandbox.lisp
 FORMATION-CACHE-ENTRY-P
 >saf>sandbox>sandbox.lisp
 COPY-FORMATION-CACHE-ENTRY
 >saf>sandbox>sandbox.lisp
 MAKE-FCE
 >saf>sandbox>sandbox.lisp
Description: None

2.3.2.1.8 *FORMATION-CACHE*

Definition 8

>saf>sandbox>sandbox.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: FIND-FORMATION-INFO
 >saf>sandbox>sandbox.lisp
 CACHE-FORMATION-INFO
 >saf>sandbox>sandbox.lisp
Description: None

2.3.2.1.9 *DEBUG-FCE*

Definition 9

>saf>sandbox>sandbox.lisp
Type: Variable
Arguments: ()

Outputs:

Calls: None

Called by: FIND-FORMATION-INFO
>saf>sandbox>sandbox.lisp

Description: None

2.3.2.1.10 CACHE-FORMATION-INFO

Definition 10

>saf>sandbox>sandbox.lisp

Type: Function

Arguments: (OBJECT)

Outputs:

Calls: VEH-MAIN-BATTLE-TANK
>saf>network>vars.lisp
VEH-PERSONNEL-CARRIER
>saf>network>vars.lisp
VEH-MORTAR-CARRIER
>saf>network>vars.lisp
VEH-SP-HOWITZER
>saf>network>vars.lisp
VEH-ATTACK-HELICOPTER
>saf>network>vars.lisp
VEH-FIGHTER-BOMBER
>saf>network>vars.lisp
VEH-ANTI-AIRCRAFT
>saf>network>vars.lisp
FORMATION-CACHE-ENTRY
>saf>sandbox>sandbox.lisp
FORMATION-CACHE
>saf>sandbox>sandbox.lisp

Called by: None

Description: None

2.3.2.1.11 FIND-FORMATION-INFO

Definition 11

>saf>sandbox>sandbox.lisp

Type: Function

Arguments: (THING)

Outputs:

Calls: DISTANCE
>map>utilities.lisp
OPFOR-IO
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
FORMATION-CACHE
>saf>sandbox>sandbox.lisp
DEBUG-FCE
>saf>sandbox>sandbox.lisp
SANDBOX-OBJECT

>saf>bmi>presentation-types.lisp
FORMATION
>saf>cm>control-measure.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp

Called by: None

Description: None

2.3.2.2 CSU sandbox>sandbox-object.lisp

This unit contains the definition for the *sandbox-object* data-structure and its associated functions. A *sandbox-object* is a unit or vehicle that can be placed, copied, displayed, erased, etc. in a *sandbox*. Functions in this CSU provide those capabilities.

2.3.2.2.1 SANDBOX-OBJECT

Definition 1

>saf>sandbox>sandbox-object.lisp
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: (WRITE-INSTANCE-VARIABLE (SETF SANDBOX-OBJECT)
SIMNET-AGENT SANDBOX-OBJECT)
No Source File Record
(READ-INSTANCE-VARIABLE SANDBOX-OBJECT SIMNET-AGENT
SANDBOX-OBJECT)
No Source File Record
(PRESENTATION-MOUSE-HANDLER SANDBOX-OBJECT-GESTURE)
No Source File Record
CREATE-STORED-INSTANCE
>saf>sys>new-storage.lisp
FILTERED-SAVE-INSTANCE
>saf>sys>new-storage.lisp
MAKE-AGENT
>saf>simnet-objects>vehicle-tracking.lisp
(METHOD DISPLAY-TOTALS-PANE BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-FWA-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
(METHOD MAKE-SANDBOX-OBJECT-INTERNAL BMI)
>saf>bmi>bmi-frame.lisp
DRAW-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp
COPY-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp
(PROPERTY SANDBOX-OBJECT NAMED-STRUCTURE-INVOKE)
No Source File Record
SANDBOX-OBJECT-P
>saf>sandbox>sandbox-object.lisp

MAKE-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp
FIND-FORMATION-INFO
>saf>sandbox>sandbox.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp

Description: None

2.3.2.2.2 COPY-SANDBOX-OBJECT

Definition 2

>saf>sandbox>sandbox-object.lisp
Type: Function
Arguments: (STRUCTURE)
Outputs:
Calls: SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
Called by: COPY-SANDBOX
>saf>sandbox>sandbox.lisp
Description: None

2.3.2.2.3 SANDBOX-OBJECT-ALU

Definition 3

>saf>sandbox>sandbox-object.lisp
Type: Function
Arguments: (OBJECT)
Outputs:
Calls: ALIGNED-FOE
>saf>sys>vars.lisp
ALIGNED-OFFENSE
>saf>sys>vars.lisp
ALIGNED-DEFENSE
>saf>sys>vars.lisp
ALIGNED-FRIEND
>saf>sys>vars.lisp
ALIGNED-USSR
>saf>sys>vars.lisp
ALIGNED-US
>saf>sys>vars.lisp
FRIEND-ALLIANCE
>saf>sys>vars.lisp
FOE-ALLIANCE
>saf>sys>vars.lisp
OFFENSE-ALU
>saf>sys>vars.lisp
DEFENSE-ALU
>saf>sys>vars.lisp

Called by: DRAW-SANDBOX-UNIT
>saf>sandbox>sandbox-object.lisp
DRAW-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp

Description: None

2.3.2.2.4 SANDBOX-OBJECT-COUNTRY

Definition 4

>saf>sandbox>sandbox-object.lisp
Type: Function
Arguments: (OBJECT)
Outputs:
Calls: ALIGNED-FOE
>saf>sys>vars.lisp
ALIGNED-OFFENSE
>saf>sys>vars.lisp
ALIGNED-DEFENSE
>saf>sys>vars.lisp
ALIGNED-FRIEND
>saf>sys>vars.lisp
ALIGNED-USSR
>saf>sys>vars.lisp
ALIGNED-US
>saf>sys>vars.lisp
FRIEND-ALLIANCE
>saf>sys>vars.lisp
FOE-ALLIANCE
>saf>sys>vars.lisp

Called by: ERASE-SANDBOX-OBJECT

>saf>sandbox>sandbox-object.lisp
DRAW-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp

Description: None

2.3.2.2.5 DRAW-SANDBOX-OBJECT

Definition 5

>saf>sandbox>sandbox-object.lisp
Type: Function
Arguments: (OBJECT &OPTIONAL (WINDOW *PVD-DISPLAY*) (SENSITIVE-TYPE 'SANDBOX-OBJECT))
Outputs:
Calls: *PVD-DISPLAY*
>saf>sys>vars.lisp
TRIM-ALU
>saf>sys>vars.lisp
PAINT-VEHICLES-AS-ICONS
>saf>sys>vars.lisp
MAP-ECHELON-TYPE-TO-ICON
>saf>sys>interim-model.lisp

LOCAL
>saf>network>vars.lisp
VEHICLE
>saf>objects>vehicle.lisp
VEHICLE
>saf>objects>vehicle.lisp
DRAW-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
IMAGE-FOR-VEHICLE
>saf>simnet-objects>draw-vehicles.lisp
DRAW-VEHICLE
>saf>simnet-objects>new-draw-vehicles.lisp
SAF
>saf>ui>frame.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
SANDBOX-OBJECT-ALU
>saf>sandbox>sandbox-object.lisp
SANDBOX-OBJECT-COUNTRY
>saf>sandbox>sandbox-object.lisp
DRAW-SANDBOX-UNIT
>saf>sandbox>sandbox-object.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp

Called by: (METHOD COM-SELECT-UNITS-INTERNAL SAF)

No Source File Record

DRAW-SANDBOX

>saf>sandbox>sandbox.lisp

Description: None

2.3.2.2.6 ERASE-SANDBOX-OBJFCT

Definition 6

>saf>sandbox>sandbox-object.lisp

Type: Function

Arguments: (OBJECT &OPTIONAL (WINDOW *PVD-DISPLAY*))

Outputs:

Calls: *PVD-DISPLAY*

>saf>sys>vars.lisp

ERASE-VEHICLES-ALU

>saf>sys>vars.lisp

PAINT-VEHICLES-AS-ICONS

>saf>sys>vars.lisp

MAP-ECHELON-TYPE-TO-ICON

>saf>sys>interim-model.lisp

LOCAL

>saf>network>vars.lisp

VEHICLE

>saf>objects>vehicle.lisp

VEHICLE

>saf>objects>vehicle.lisp

ERASE-IMAGE

>saf>simnet-objects>draw-vehicles.lisp

IMAGE-FOR-VEHICLE

>saf>simnet-objects>draw-vehicles.lisp

DRAW-VEHICLE

>saf>simnet-objects>new-draw-vehicles.lisp

SAF

>saf>ui>frame.lisp

SANDBOX-OBJECT-COUNTRY

>saf>sandbox>sandbox-object.lisp

DRAW-SANDBOX-UNIT

>saf>sandbox>sandbox-object.lisp

Called by: (METHOD BMI-REMOVE-SANDBOX-OBJECT BMI)

>saf>bmi>bmi-frame.lisp

ERASE-SANDBOX

>saf>sandbox>sandbox.lisp

Description: None

2.3.2.2.7 DRAW-SANDBOX-UNIT

Definition 7

>saf>sandbox>sandbox-object.lisp

Type: Function

Arguments: (OBJECT DRAW-OR-ERASE STREAM)

Outputs:

Calls: *ERASE-VEHICLES-ALU*

>saf>sys>vars.lisp

MAP-ECHELON-TYPE-TO-ICON

>saf>sys>interim-model.lisp

DRAW-UNIT

>saf>simnet-objects>draw-units.lisp

SAF

>saf>ui>frame.lisp

SANDBOX-OBJECT-ALU

>saf>sandbox>sandbox-object.lisp

Called by: ERASE-SANDBOX-OBJECT

>saf>sandbox>sandbox-object.lisp

DRAW-SANDBOX-OBJECT

>saf>sandbox>sandbox-object.lisp

Description: None

2.3.2.3 CSU sandbox>utilities.lisp

This CSU contains several utility functions used by the sandbox code. Functions for menu presentation create lists of sandboxes to be displayed as menu items, such as the list of all active sandboxes, all sandboxes on disk, or all sandboxes.

Object creation no longer occurs in this file; sandbox objects are created by the constructor *make-sandbox-object*, which is called from other files, such as *bmi>bmi-frame.lisp*.

2.3.2.3.1 ACTIVE-SANBOXES-AS-MENU-ITEMS

Definition 1

>saf>sandbox>utilities.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *ACTIVE-SANBOXES*

>saf>sys>vars.lisp

Called by: ALL-SANBOXES-AS-MENU-ITEMS

>saf>sandbox>utilities.lisp

Description: None

2.3.2.3.2 NAMES-OF-DISK-SANBOXES

Definition 2

>saf>sandbox>utilities.lisp

Type: Function

Arguments: ()

Outputs:

Calls: NAME

>saf>sysdcl.lisp

Called by: ALL-SANBOXES-AS-MENU-ITEMS

>saf>sandbox>utilities.lisp

Description: None

2.3.2.3.3 SYMBOL-VS-CAR-LIST-TEST

Definition 3

>saf>sandbox>utilities.lisp

Type: Function

Arguments: (A B)

Outputs:

Calls: None

Called by: ALL-SANBOXES-AS-MENU-ITEMS

>saf>sandbox>utilities.lisp

Description: None

2.3.2.3.4 ALL-SANBOXES-AS-MENU-ITEMS

Definition 4

>saf>sandbox>utilities.lisp

Type: Function

Arguments: ()

Outputs:

Calls: ACTIVE-SANBOXES-AS-MENU-ITEMS

>saf>sandbox>utilities.lisp

NAMES-OF-DISK-SANBOXES

>saf>sandbox>utilities.lisp

SYMBOL-VS-CAR-LIST-TEST

>saf>sandbox>utilities.lisp

Called by: RETRIEVE-A-SANDBOX
>saf>bmi>utilities.lisp
Description: None

2.3.2.3.5 'GET-LOCATION-AND-BEARING

Definition 5

>saf>sandbox>utilities.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.3.2.3.6 GET-LOCATION-AND-BEARING

Definition 6

>saf>sandbox>utilities.lisp
Type: Function
Arguments: (STREAM)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
SCREEN-TO-WORLD
>map>utilities.lisp
 π
>saf>sys>constants.lisp
 2π
>saf>sys>constants.lisp
90DEG
>saf>sys>constants.lisp
RAD-TO-MIL
>saf>sys>constants.lisp
RADIANS-COMPASS-TO-RADIANS-MATH
>saf>sys>macros.lisp
RADIANS-MATH-TO-RADIANS-COMPASS
>saf>sys>macros.lisp
COMPASS-ANGLE
>saf>sys>macros.lisp
MATH-ANGLE
>saf>sys>macros.lisp
RADIANS-COMPASS-TO-MILS
>saf>sys>macros.lisp
RADIANS-MATH-TO-MILS
>saf>sys>macros.lisp

Called by: (METHOD COM-SELECT-UNITS-INTERNAL SAF)
No Source File Record
Description: None

2.3.3 scenario CSC

This CSC contains the code which allow scenarios to be stored and retrieve at any time during an exercise. The CSUs in this CSC are:

objects>storable-mixin.lisp csu
sys>new-storage.lisp csu

2.3.3.1 CSU objects>storable-mixin.lisp

This csu defines a mixin called *storable-mixin*. This flavor object defines an "instance-name" slot that is used by the storage facility *save-top-level-and-inferiors*, defined in sys>new-storage.lisp. For an object to be storable in this way, it must inherit the instance-name slot from *storable-mixin* in the flavor hierarchy. For more information on mixins in the flavor hierarchy, see the Symbolics manuals.

2.3.3.1.1 STORABLE-MIXIN

Definition 1

>saf>objects>storable-mixin.lisp
Type: DEFOBJECT
Arguments: ()
Outputs:
Calls: None
Called by: SCENARIO
 >saf>sys>new-storage.lisp
 SUB-TASK
 >saf>ui>subordinate-tasking.lisp
 UNIT-TASK
 >saf>ui>subordinate-tasking.lisp
 OVERLAY
 >saf>cm>overlay.lisp
 CONTROL-MEASURE-POINT
 >saf>cm>control-measure-point.lisp
 ROUTE-POINT
 >saf>cm>route-point.lisp
 CONTROL-MEASURE-BEHAVIOR
 >saf>cm>control-measure.lisp
 ZONE-BEHAVIOR
 >saf>cm>zone.lisp
 AREA-BEHAVIOR
 >saf>cm>area.lisp
 LINE-BEHAVIOR
 >saf>cm>line.lisp
 CM-POINT-BEHAVIOR
 >saf>cm>point.lisp
 ROUTE-BEHAVIOR
 >saf>cm>route.lisp
 CONTROL-MEASURE
 >saf>cm>control-measure.lisp
 GENERIC-AREA
 >saf>cm>generic-area.lisp

ZONE
>saf>cm>zone.lisp
AREA
>saf>cm>area.lisp
LINE
>saf>cm>line.lisp
CM-POINT
>saf>cm>point.lisp
ROUTE
>saf>cm>route.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
VEHICLE
>saf>objects>vehicle.lisp
COMPOSITE-OBJECT
>saf>objects>composite-object.lisp
SAVE-INSTANCE
>saf>sys>new-storage.lisp
MAKE-OBJECT-LIST-RECURSIVE
>saf>sys>new-storage.lisp

Description: None

2.3.3.2 CSU sys>new-storage.lisp

This unit contains code for saving certain kinds of lisp objects in a text file. It is used primarily to store and retrieve SAF unit and control measures information.

Symbolics provides a function that saves lisp objects in a *binary* file. The storage code in this CSU saves objects in a *text* file that can be conveniently edited when necessary.

The basic save function is called *save-top-level-and-inferiors*. It has been designed to handle, in a systematic way, the fact that objects to be saved often point to other objects, which must also be saved. Not only that, but the graph of pointer-connections usually contains closed cycles, in the intended application. Because of these cycles, a standard nested-list print representation of the objects may not exist, so a simpler storage approach based on the Lisp reader can't be used.

The storage function starts by a recursive descent, starting from given top-level objects, to find all the objects pointed to; this happens in the function *make-object-list-recursive*.

To simplify the storage and retrieval processes, the pointer links (the values in the slot-value pairs of the flavor instances to be stored) are replaced, before storage, by *instance-names*, standardized names, created using the function *return-iterated-symbol*, that serve as tags to identify the flavor-instances pointed to. A hash table is created linking the instances with their instance names, to make the replacement process fast. The instance's own instance-name is written into a special slot it inherits from the flavor mixin *storable-mixin*, defined in objects>storable-mixin.lisp. Instance-names have the form DB-INSTANCE-[number], to make them easy to spot in the text file.

On retrieval, instances are created first in memory with no pointer links, and a hash table linking instance-names back to instances is built. When all the instances have been made, the hash table is used to replace each instance-name by an actual value, reconstructing the original lisp pointer structure.

Objects stored are restricted to be flavor instances, and must mixin *storable-mixin*, which provides a slot to record the instance's instance-name before it's written to disk. Other restrictions on objects to be stored are described in the source-file's comment header.

2.3.3.2.1 *DBASE-FILE*

Definition 1

>saf>sys>new-storage.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: READ-AND-MAKE-INSTANCES
 >saf>sys>new-storage.lisp
 SAVE-IN-DATABASE
 >saf>sys>new-storage.lisp
 SAVE-TOP-LEVEL-AND-INFERIORS
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.2 COERCE-STRING

Definition 2

>saf>sys>new-storage.lisp
Type: Function
Arguments: (X)
Outputs:
Calls: None
Called by: MKATOM
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.3 MKATOM

Definition 3

>saf>sys>new-storage.lisp
Type: Function
Arguments: (ITEM)
Outputs:
Calls: SAF
 >saf>ui>frame.lisp
 COERCE-STRING
 >saf>sys>new-storage.lisp
Called by: (PRESENTATION-MOUSE-HANDLER INSERT-POINT-1)
 No Source File Record
 (PRESENTATION-MOUSE-HANDLER INSERT-POINT)
 No Source File Record
 REMOVE-THIS-WINDOW-FROM-THE-CONFIGURATION
 >saf>interface>object-menu.lisp
 TRUNCATE-IF-NECESSARY
 >saf>interface>object-menu.lisp

UNDO-ALL-CHANGES
>saf>interface>object-menu.lisp
(METHOD UNDO-LAST-CHANGE-INTERNAL OBJECT-MS-PANE)
>saf>interface>object-menu.lisp
(METHOD SAVE-ALL-OBJECT- INFORMATION OBJECT-MS-PANE)
>saf>interface>object-menu.lisp
WRITE-DIRECT-FIRE-DAMAGE-DATA-FILE
>saf>interface>model-menu.lisp
WRITE-INDIRECT-FIRE-DAMAGE-DATA-FILE
>saf>interface>model-menu.lisp
MAKE-DICTIONARY-PAIRS
>saf>interface>model-menu.lisp
(METHOD ALTER-PROBABILITY POINT)
>saf>interface>model-menu.lisp
(METHOD ALTER-RANGE POINT)
>saf>interface>model-menu.lisp
(METHOD DRAG-UP-DOWN POINT)
>saf>interface>model-menu.lisp
SELECT-AND-DRAG-UP-DOWN-POINT
>saf>interface>model-menu.lisp
GO-BACK-TO-PREVIOUS-STEP
>saf>interface>model-menu.lisp
UPDATE-BACKTRACKING-CAPABILITY
>saf>interface>model-menu.lisp
SELECT-AND-DRAG-POINT
>saf>interface>model-menu.lisp
GET-POINT
>saf>interface>model-menu.lisp
(METHOD ERASE-POINT-AND-LINES POINT)
>saf>interface>model-menu.lisp
(METHOD DRAG POINT)
>saf>interface>model-menu.lisp
ADD-NEW-POINT
>saf>interface>model-menu.lisp
RECORD-NEW-POINT
>saf>interface>model-menu.lisp
ADD-CORRESPONDING-NEW-POINT-IN-POINT-LIST
>saf>interface>model-menu.lisp
UPDATE-POINT-LIST
>saf>interface>model-menu.lisp
FIND-SURROUNDING-POINTS
>saf>interface>model-menu.lisp
DELETE-POINT-IF-THERE
>saf>interface>model-menu.lisp
(METHOD EXPUNGE POINT)
>saf>interface>model-menu.lisp
DRAW-X-TICKS
>saf>interface>model-menu.lisp
GET-CURRENT-LINE-POINTS
>saf>interface>model-menu.lisp
GET-CURRENT-GRAFH-POINTS
>saf>interface>model-menu.lisp
LOAD-SCENARIO
>saf>sys>new-storage.lisp

LOAD-OVERLAY

>saf>sys>new-storage.lisp
GIMME-VAR-NAME-OF-CURRENT-POINTS
>saf>interface>model-menu.lisp
GIMME-VAR-NAME-OF-CURRENT-GRAFH
>saf>interface>model-menu.lisp

Description: None

2.3.3.2.4 GET-INSTANCE-VARIABLES

Definition 4

>saf>sys>new-storage.lisp

Type: Macro

Arguments: (INSTANCE)

Outputs:

Calls: GET-INSTANCE-VARIABLES

>saf>sys>new-storage.lisp
Called by: REMOVE-LEFTOVER-INSTANCE-NAMES
>saf>sys>new-storage.lisp
READ-AND-MAKE-INSTANCES
>saf>sys>new-storage.lisp
SAVE-INSTANCE
>saf>sys>new-storage.lisp
MAKE-OBJECT-LIST-RECURSIVE
>saf>sys>new-storage.lisp
GET-INSTANCE-VARIABLES
>saf>sys>new-storage.lisp

Description: None

2.3.3.2.5 ITERATED-SYMBOL

Definition 5

>saf>sys>new-storage.lisp

Type: Subst

Arguments: (NUM)

Outputs:

Calls: None

Called by: RETURN-ITERATED-SYMBOL
>saf>sys>new-storage.lisp

Description: None

2.3.3.2.6 RETURN-ITERATED-SYMBOL

Definition 6

>saf>sys>new-storage.lisp

Type: Function

Arguments: (NUM)

Outputs:

Calls: ITERATED-SYMBOL

>saf>sys>new-storage.lisp

Called by: SAVE-IN-DATABASE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.7 GET-VALUE-SUBST

Definition 7

>saf>sys>new-storage.lisp
Type: Subst
Arguments: (SLOT INSTANCE)
Outputs:
Calls: None
Called by: GET-VALUE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.8 GET-VALUE

Definition 8

>saf>sys>new-storage.lisp
Type: Function
Arguments: (SLOT INSTANCE)
Outputs:
Calls: GET-VALUE-SUBST
>saf>sys>new-storage.lisp
Called by: REMOVE-LEFTOVER-INSTANCE-NAMES
>saf>sys>new-storage.lisp
READ-AND-MAKE-INSTANCES
>saf>sys>new-storage.lisp
SAVE-INSTANCE
>saf>sys>new-storage.lisp
MAKE-OBJECT-LIST-RECURSIVE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.9 REPLACE-VALUE-SUBST

Definition 9

>saf>sys>new-storage.lisp
Type: Subst
Arguments: (SLOT INSTANCE VALUE)
Outputs:
Calls: None
Called by: REPLACE-VALUE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.10 REPLACE-VALUE

Definition 10

>saf>sys>new-storage.lisp
Type: Function
Arguments: (SLOT INSTANCE VALUE)
Outputs:
Calls: REPLACE-VALUE-SUBST
 >saf>sys>new-storage.lisp
Called by: REMOVE-LEFTOVER-INSTANCE-NAMES
 >saf>sys>new-storage.lisp
 READ-AND-MAKE-INSTANCES
 >saf>sys>new-storage.lisp
 SAVE-IN-DATABASE
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.11 SAVE-TOP-LEVEL-AND-INFERIORS

Definition 11

>saf>sys>new-storage.lisp
Type: Function
Arguments: (LIST-OF-TOP-LEVEL-OBJECTS &OPTIONAL (FILENAME *DBASE-FILE*))
Outputs:
Calls: *DBASE-FILE*
 >saf>sys>new-storage.lisp
 MAKE-OBJECT-LIST-RECURSIVE
 >saf>sys>new-storage.lisp
 SAVE-IN-DATABASE
 >saf>sys>new-storage.lisp
Called by: (METHOD STORE SCENARIO)
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.12 MAKE-OBJECT-LIST-RECURSIVE

Definition 12

>saf>sys>new-storage.lisp
Type: Function
Arguments: (STUFF-TO-SAVE OBJECT-LIST)
Outputs:
Calls: STORABLE-MIXIN
 >saf>objects>storable-mixin.lisp
 GET-INSTANCE-VARIABLES
 >saf>sys>new-storage.lisp
 GET-VALUE
 >saf>sys>new-storage.lisp
 MAKE-OBJECT-LIST-RECURSIVE
 >saf>sys>new-storage.lisp

Called by: MAKE-OBJECT-LIST-RECURSIVE
>saf>sys>new-storage.lisp
SAVE-TOP-LEVEL-AND-INFERIORS
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.13 SAVE-IN-DATABASE

Definition 13

>saf>sys>new-storage.lisp
Type: Function
Arguments: (LIST-OF-INSTANCES &OPTIONAL (FILENAME *DBASE-FILE*))
Outputs:
Calls: *DBASE-FILE*
>saf>sys>new-storage.lisp
RETURN-ITERATED-SYMBOL
>saf>sys>new-storage.lisp
REPLACE-VALUE
>saf>sys>new-storage.lisp
FILTERED-SAVE-INSTANCE
>saf>sys>new-storage.lisp
Called by: SAVE-TOP-LEVEL-AND-INFERIORS
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.14 SAVE-INSTANCE

Definition 14

>saf>sys>new-storage.lisp
Type: Function
Arguments: (INSTANCE STREAM INST-HASH-TABLE)
Outputs:
Calls: STORABLE-MIXIN
>saf>objects>storable-mixin.lisp
GET-INSTANCE-VARIABLES
>saf>sys>new-storage.lisp
GET-VALUE
>saf>sys>new-storage.lisp
REPLACE-SLOT-VALUE-OBJECTS
>saf>sys>new-storage.lisp
Called by: FILTERED-SAVE-INSTANCE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.15 REPLACE-SLOT-VALUE-OBJECTS

Definition 15

>saf>sys>new-storage.lisp
Type: Function
Arguments: (SLOT-VALUE INST-HASH-TABLE)
Outputs:

Calls: REPLACE-SLOT-VALUE-OBJECTS
>saf>sys>new-storage.lisp
Called by: REPLACE-SLOT-VALUE-OBJECTS
>saf>sys>new-storage.lisp
SAVE-INSTANCE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.16 READ-AND-MAKE-INSTANCES

Definition 16

>saf>sys>new-storage.lisp
Type: Function
Arguments: (&OPTIONAL (FILENAME *DBASE-FILE*))
Outputs:
Calls: *DB-INSTANCES*
>saf>sys>vars.lisp
SAF
>saf>ui>frame.lisp
DBASE-FILE
>saf>sys>new-storage.lisp
GET-INSTANCE-VARIABLES
>saf>sys>new-storage.lisp
GET-VALUE
>saf>sys>new-storage.lisp
REPLACE-VALUE
>saf>sys>new-storage.lisp
REPLACE-SLOT-VALUE-INSTANCE-NAMES
>saf>sys>new-storage.lisp
REMOVE-LEFTOVER-DB-INSTANCES
>saf>sys>new-storage.lisp
Called by: LOAD-SCENARIO
>saf>sys>new-storage.lisp
LOAD-OVERLAY
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.17 REPLACE-SLOT-VALUE-INSTANCE-NAMES

Definition 17

>saf>sys>new-storage.lisp
Type: Function
Arguments: (SLOT-VALUE INST-HASH-TABLE)
Outputs:
Calls: REPLACE-SLOT-VALUE-INSTANCE-NAMES
>saf>sys>new-storage.lisp
Called by: REPLACE-SLOT-VALUE-INSTANCE-NAMES
>saf>sys>new-storage.lisp
READ-AND-MAKE-INSTANCES
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.18 REMOVE-LEFTOVER-SLOT-VALUE-INSTANCE-NAMES

Definition 18

>saf>sys>new-storage.lisp

Type: Function

Arguments: (SLOT-VALUE)

Outputs:

Calls: REMOVE-LEFTOVER-SLOT-VALUE-INSTANCE-NAMES

>saf>sys>new-storage.lisp

Called by: REMOVE-LEFTOVER-INSTANCE-NAMES

>saf>sys>new-storage.lisp

REMOVE-LEFTOVER-SLOT-VALUE-INSTANCE-NAMES

>saf>sys>new-storage.lisp

Description: None

2.3.3.2.19 REMOVE-LEFTOVER-INSTANCE-NAMES

Definition 19

>saf>sys>new-storage.lisp

Type: Function

Arguments: (INSTANCE)

Outputs:

Calls: GET-INSTANCE-VARIABLES

>saf>sys>new-storage.lisp

GET-VALUE

>saf>sys>new-storage.lisp

REPLACE-VALUE

>saf>sys>new-storage.lisp

REMOVE-LEFTOVER-SLOT-VALUE-INSTANCE-NAMES

>saf>sys>new-storage.lisp

Called by: REMOVE-LEFTOVER-DB-INSTANCES

>saf>sys>new-storage.lisp

Description: None

2.3.3.2.20 REMOVE-LEFTOVER-DB-INSTANCES

Definition 20

>saf>sys>new-storage.lisp

Type: Function

Arguments: (&OPTIONAL (INST-LIST *DB-INSTANCES*))

Outputs:

Calls: *DB-INSTANCES*

>saf>sys>vars.lisp

REMOVE-LEFTOVER-INSTANCE-NAMES

>saf>sys>new-storage.lisp

Called by: READ-AND-MAKE-INSTANCES

>saf>sys>new-storage.lisp

Description: None

2.3.3.2.21 *SCENARIO*

Definition 21

>saf>sys>new-storage.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: STORE-SCENARIO
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.22 *SAVE-INSTANCE-FILTER*

Definition 22

>saf>sys>new-storage.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: RETURN-SCENARIO-OBJECT-LIST
 >saf>sys>new-storage.lisp
 STORE-SCENARIO
 >saf>sys>new-storage.lisp
 NAME-AND-STORE-SCENARIO
 >saf>sys>new-storage.lisp
 NAME-AND-STORE-OVERLAY
 >saf>sys>new-storage.lisp
 FILTERED-SAVE-INSTANCE
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.23 SAVE-FOR-TASKING-P

Definition 23

>saf>sys>new-storage.lisp
Type: Function
Arguments: (AGENT-INST)
Outputs:
Calls: SIMNET-AGENT
 >saf>objects>simnet-agent.lisp
 SIMNET-AGENT
 >saf>objects>simnet-agent.lisp
 SIMNET-AGENT
 >saf>objects>simnet-agent.lisp
 TOP-LEVEL-TASKING
 >saf>ui>subordinate-tasking.lisp
 UNIT-TASK
 >saf>ui>subordinate-tasking.lisp
 UNIT
 >saf>cm>control-measure.lisp

Called by: FILTERED-SAVE-INSTANCE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.24 FILTERED-SAVE-INSTANCE

Definition 24

>saf>sys>new-storage.lisp
Type: Function
Arguments: (INSTANCE STREAM INST-HASH-TABLE LIST-OF-INSTANCES)
Outputs:
Calls: SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
UNIT-TASK
>saf>ui>subordinate-tasking.lisp
SUB-TASK
>saf>ui>subordinate-tasking.lisp
SAVE-INSTANCE
>saf>sys>new-storage.lisp
SAVE-INSTANCE-FILTER
>saf>sys>new-storage.lisp
SAVE-FOR-TASKING-P
>saf>sys>new-storage.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
CONTROL-MEASURE-BEHAVIOR
>saf>cm>control-measure.lisp
SANDBOX-OBJECT
>saf>bmi>presentation-types.lisp
Called by: SAVE-IN-DATABASE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.25 CONCATLIST

Definition 25

>saf>sys>new-storage.lisp
Type: Subst
Arguments: (ARGS)
Outputs:
Calls: None
Called by: CONCAT
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.26 CONCAT

Definition 26

>saf>sys>new-storage.lisp

Type: Function

Arguments: (&REST ARGS)

Outputs:

Calls: CONCATLIST

>saf>sys>new-storage.lisp

Called by: (PRESENTATION-MOUSE-HANDLER INSERT-POINT-1)

No Source File Record

(PRESENTATION-MOUSE-HANDLER INSERT-POINT)

No Source File Record

(METHOD DRAW-ALTITUDE FORMATION-OBJECT)

>saf>interface>formations.lisp

(METHOD DRAW FORMATION-OBJECT)

>saf>interface>formations.lisp

REMOVE-THIS-WINDOW-FROM-THE-CONFIGURATION

>saf>interface>object-menu.lisp

TRUNCATE-IF-NECESSARY

>saf>interface>object-menu.lisp

FIND-FIELD-DESCRIPTOR

>saf>interface>object-menu.lisp

READ-OBJECT-FILE

>saf>interface>object-menu.lisp

FETCH-DF-DATA

>saf>interface>model-menu.lisp

READ-DIRECT-FIRE-DAMAGE-DATA

>saf>interface>model-menu.lisp

FETCH-IF-DATA

>saf>interface>model-menu.lisp

READ-INDIRECT-FIRE-DAMAGE-DATA

>saf>interface>model-menu.lisp

MAKE-DICTIONARY-PAIRS

>saf>interface>model-menu.lisp

(METHOD ALTER-PROBABILITY POINT)

>saf>interface>model-menu.lisp

(METHOD ALTER-RANGE POINT)

>saf>interface>model-menu.lisp

(METHOD DRAG-UP-DOWN POINT)

>saf>interface>model-menu.lisp

SELECT-AND-DRAG-UP-DOWN-POINT

>saf>interface>model-menu.lisp

SELECT-HOST

>saf>interface>model-menu.lisp

SWITCH-HIGHLIGHT

>saf>interface>model-menu.lisp

GO-BACK-TO-PREVIOUS-STEP

>saf>interface>model-menu.lisp

UPDATE-BACKTRACKING-CAPABILITY

>saf>interface>model-menu.lisp

SELECT-AND-DRAG-POINT

>saf>interface>model-menu.lisp

GET-POINT

```

>saf>interface>model-menu.lisp
(METHOD ERASE-POINT-AND-LINES POINT)
>saf>interface>model-menu.lisp
(METHOD DRAG POINT)
>saf>interface>model-menu.lisp
ADD-NEW-POINT
>saf>interface>model-menu.lisp
RECORD-NEW-POINT
>saf>interface>model-menu.lisp
ADD-CORRESPONDING-NEW-POINT-IN-POINT-LIST
>saf>interface>model-menu.lisp
UPDATE-POINT-LIST
>saf>interface>model-menu.lisp
FIND-SURROUNDING-POINTS
>saf>interface>model-menu.lisp
DELETE-POINT-IF-THERE
>saf>interface>model-menu.lisp
(METHOD EXPUNGE POINT)
>saf>interface>model-menu.lisp
DRAW-X-TICKS
>saf>interface>model-menu.lisp
GET-CURRENT-LINE-POINTS
>saf>interface>model-menu.lisp
GET-CURRENT-GRAFH-POINTS
>saf>interface>model-menu.lisp
(METHOD STORE SCENARIO)
>saf>sys>new-storage.lisp
GIMME-VAR-NAME-OF-CURRENT-POINTS
>saf>interface>model-menu.lisp
GIMME-VAR-NAME-OF-CURRENT-GRAFH
>saf>interface>model-menu.lisp

```

Description: None

2.3.3.2.27 SCENARIO

Definition 27

>saf>sys>new-storage.lisp

Type: Flavor

Arguments: ()

Outputs:

Calls: STORABLE-MIXIN

>saf>objects>storable-mixin.lisp

Called by: None

Description: None

2.3.3.2.28 CLOSE-ENOUGH

Definition 28

>saf>sys>new-storage.lisp

Type: Function

Arguments: (GOAL ATTEMPT &OPTIONAL (TOLERANCE 0.1))

Outputs:

Calls: None
Called by: (METHOD ADJUST-VIEWPORT SCENARIO)
 >saf>sys>new-storage.lisp
Description: used to compare numbers when equality is too strict

2.3.3.2.29 (METHOD ADJUST-VIEWPORT SCENARIO)

Definition 29

>saf>sys>new-storage.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *ZOOM-LEVELS*
 >map>zoom-levels.lisp
 ZOOM-LEVELS
 >map>zoom-levels.lisp
 PVD-DISPLAY
 >saf>sys>vars.lisp
 INTERFACE-TO-UPDATE-PROCESS-QUEUE
 >saf>sys>vars.lisp
 ADD-TO-UPDATE-QUEUE
 >saf>sys>macros.lisp
 CLOSE-ENOUGH
 >saf>sys>new-storage.lisp
Called by: None
Description: None

2.3.3.2.30 GET-SCREEN-PARAMETERS

Definition 30

>saf>sys>new-storage.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *PVD-DISPLAY*
 >saf>sys>vars.lisp
Called by: STORE-SCENARIO
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.31 *OVERLAY-TO-SAVE*

Definition 31

>saf>sys>new-storage.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None

Called by: RETURN-SCENARIO-OBJECT-LIST
>saf>sys>new-storage.lisp
NAME-AND-STORE-OVERLAY
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.32 NAME-AND-STORE-OVERLAY

Definition 32

>saf>sys>new-storage.lisp
Type: Function
Arguments: ()
Outputs:
>saf>sys>vars.lisp
ALL-OVERLAYS
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
SAVE-INSTANCE-FILTER
>saf>sys>new-storage.lisp
OVERLAY-TO-SAVE
>saf>sys>new-storage.lisp
REMOVE-DOTS-FROM-STRING
>saf>sys>new-storage.lisp
STORE-SCENARIO
>saf>sys>new-storage.lisp
Called by: SAVE-OR-LOAD-OVERLAYS
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.33 SAVE-OR-LOAD-OVERLAYS

Definition 33

>saf>sys>new-storage.lisp
Type: Function
Arguments: ()
Outputs:
Calls: NAME-AND-STORE-OVERLAY
>saf>sys>new-storage.lisp
LOAD-OVERLAY
>saf>sys>new-storage.lisp
Called by: (METHOD COM-SELECT-BUTTON-INTERNAL SAF)
No Source File Record
Description: None

2.3.3.2.34 NAME-AND-STORE-SCENARIO

Definition 34

>saf>sys>new-storage.lisp
Type: Function
Arguments: ()

Outputs:

Calls: *OPFOR-IO*
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
SAVE-INSTANCE-FILTER
>saf>sys>new-storage.lisp
REMOVE-DOTS-FROM-STRING
>saf>sys>new-storage.lisp
STORE-SCENARIO
>saf>sys>new-storage.lisp

Called by: (METHOD COM-SELECT-BUTTON-INTERNAL SAF)

No Source File Record
COM-STORE-SCENARIO
>saf>ui>commands.lisp
COM-SAVE-SCENARIO
>saf>ui>commands.lisp

Description: None

2.3.3.2.35 REMOVE-DOTS-FROM-STRING

Definition 35

>saf>sys>new-storage.lisp

Type: Function

Arguments: (STRING)

Outputs:

Calls: REMOVE-DOTS-FROM-STRING
>saf>sys>new-storage.lisp

Called by: REMOVE-DOTS-FROM-STRING

>saf>sys>new-storage.lisp
NAME-AND-STORE-SCENARIO
>saf>sys>new-storage.lisp
NAME-AND-STORE-OVERLAY
>saf>sys>new-storage.lisp

Description: None

2.3.3.2.36 STORE-SCENARIO

Definition 36

>saf>sys>new-storage.lisp

Type: Function

Arguments: (NAME &KEY (FILENAME NIL))

Outputs:

Calls: NAME

>saf>sysdcl.lisp
BMI-PROGRAM
>saf>sys>vars.lisp
DB-INSTANCES
>saf>sys>vars.lisp
REAPPEAR-LATENCY
>saf>rudp>vars.lisp
RANGE-THRESHOLD

```
>saf>rudp>vars.lisp
*UPDATE-RATE*
>saf>rudp>vars.lisp
*CLUSTER-DISTANCE*
>saf>rudp>vars.lisp
*DEFAULT-BATTALION-NUMBER*
>saf>bmi>bmi-frame.lisp
*TOP-LEVEL-TASKING*
>saf>ui>subordinate-tasking.lisp
*SCENARIO*
>saf>sys>new-storage.lisp
*SAVE-INSTANCE-FILTER*
>saf>sys>new-storage.lisp
GET-SCREEN-PARAMETERS
>saf>sys>new-storage.lisp
RETURN-SCENARIO-OBJECT-LIST
```

Called by: NAME-AND-STORE-SCENARIO

```
>saf>sys>new-storage.lisp
NAME-AND-STORE-OVERLAY
>saf>sys>new-storage.lisp
```

Description: None

2.3.3.2.37 RETURN-SCENARIO-OBJECT-LIST

Definition 37

```
>saf>sys>new-storage.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *ALL-OVERLAYS*
>saf>sys>vars.lisp
GET-SUBORDINATES-INSTANCES
>saf>objects>simnet-agent.lisp
ALL-LOCAL-VEHICLES
>saf>simnet-objects>vehicle-tracking.lisp
*SAVE-INSTANCE-FILTER*
>saf>sys>new-storage.lisp
*OVERLAY-TO-SAVE*
>saf>sys>new-storage.lisp
GET-CURRENT-TOP-UNITS
>saf>sys>new-storage.lisp
```

Called by: STORE-SCENARIO

```
>saf>sys>new-storage.lisp
```

Description: None

2.3.3.2.38 GET-CURRENT-TOP-UNITS

Definition 38

```
>saf>sys>new-storage.lisp
```

Type: Function

Arguments: ()

Outputs:**Calls:** LOCAL

>saf>network>vars.lisp

TOP-LEVEL-UNITS

>saf>simnet-objects>vehicle-tracking.lisp

Called by: RETURN-SCENARIO-OBJECT-LIST

>saf>sys>new-storage.lisp

Description: None**2.3.3.2.39 *SCENARIO-DIRECTORY*****Definition 39**

>saf>sys>new-storage.lisp

Type: Parameter**Arguments:** ()**Outputs:****Calls:** None**Called by:** LOAD-SCENARIO

>saf>sys>new-storage.lisp

(METHOD STORE SCENARIO)

>saf>sys>new-storage.lisp

Description: None**2.3.3.2.40 *OVERLAY-DIRECTORY*****Definition 40**

>saf>sys>new-storage.lisp

Type: Parameter**Arguments:** ()**Outputs:****Calls:** None**Called by:** LOAD-OVERLAY

>saf>sys>new-storage.lisp

(METHOD STORE SCENARIO)

>saf>sys>new-storage.lisp

Description: None**2.3.3.2.41 (METHOD STORE SCENARIO)****Definition 41**

>saf>sys>new-storage.lisp

Type: Method**Arguments:** (&KEY (FILENAME NIL))**Outputs:****Calls:** SAVE-TOP-LEVEL-AND-INFERIORS

>saf>sys>new-storage.lisp

CONCAT

>saf>sys>new-storage.lisp

SCENARIO-DIRECTORY
>saf>sys>new-storage.lisp
OVERLAY-DIRECTORY
>saf>sys>new-storage.lisp

Called by: None
Description: None

2.3.3.2.42 LOAD-OVERLAY

Definition 42

>saf>sys>new-storage.lisp
Type: Function
Arguments: ()
Outputs:
Calls: NAME
 >saf>sysdcl.lisp
 PVD-DISPLAY
 >saf>sys>vars.lisp
 ALL-OVERLAYS
 >saf>sys>vars.lisp
 DB-INSTANCES
 >saf>sys>vars.lisp
 MKATOM
 >saf>sys>new-storage.lisp
 READ-AND-MAKE-INSTANCES
 >saf>sys>new-storage.lisp
 OVERLAY-DIRECTORY
 >saf>sys>new-storage.lisp
 OVERLAY
 >saf>cm>overlay.lisp
 OVERLAY
 >saf>cm>overlay.lisp
Called by: SAVE-OR-LOAD-OVERLAYS
 >saf>sys>new-storage.lisp
Description: None

2.3.3.2.43 LOAD-SCENARIO

Definition 43

>saf>sys>new-storage.lisp
Type: Function
Arguments: ()
Outputs:
Calls: NAME
 >saf>sysdcl.lisp
 PVD-DISPLAY
 >saf>sys>vars.lisp
 OPFOR-IO
 >saf>sys>vars.lisp
 BMI-PROGRAM
 >saf>sys>vars.lisp
 ALL-OVERLAYS

```
>saf>sys>vars.lisp
*DB-INSTANCES*
>saf>sys>vars.lisp
SAY
>saf>sys>macros.lisp
*REAPPEAR-LATENCY*
>saf>rudp>vars.lisp
*RANGE-THRESHOLD*
>saf>rudp>vars.lisp
*UPDATE-RATE*
>saf>rudp>vars.lisp
*CLUSTER-DISTANCE*
>saf>rudp>vars.lisp
STANDALONEP
>saf>network>connection.lisp
SEND-AN-IVIS-FINE-CONTROL-PACKET
>saf>network>commands.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
SIMNET-AGENT
>saf>objects>simnet-agent.lisp
*DEFAULT-BATTALION-NUMBER*
>saf>bmi>bmi-frame.lisp
*TOP-LEVEL-TASKING*
>saf>ui>subordinate-tasking.lisp
MKATOM
>saf>sys>new-storage.lisp
READ-AND-MAKE-INSTANCES
>saf>sys>new-storage.lisp
*SCENARIO-DIRECTORY*
>saf>sys>new-storage.lisp
CREATE-STORED-INSTANCE
>saf>sys>new-storage.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp
```

Called by: (METHOD COM-RESTORE-EXERCISE-INTERNAL SAF)

No Source File Record

Description: None

2.3.3.2.44 CREATE-STORED-INSTANCE

Definition 44

>saf>sys>new-storage.lisp

Type: Function

Arguments: (INSTANCE)

Outputs:

Calls: NEW-SBX-UNIQUE-UNIT-ID
 >saf>sys>vars.lisp
 MAP-ECHELON-TO-NUMBER
 >saf>sys>interim-model.lisp
 MAP-ECHELON-TYPE-TO-NUMBER
 >saf>sys>interim-model.lisp
 GET-LOCAL-HOST-SAF-PORT
 >saf>network>vars.lisp
 CREATE
 >saf>network>vars.lisp
 NET-MSG
 >saf>rudp>outgoing.lisp
 RETURN-FORCE-AND-COUNTRY-D-AND-O
 >saf>bmi>bmi-frame.lisp
 SET-INFERIORS-PORT-AND-SUPERIOR-ID
 >saf>sys>new-storage.lisp
 SANDBOX-OBJECT
 >saf>bmi>presentation-types.lisp
 SANDBOX-OBJECT
 >saf>bmi>presentation-types.lisp

Called by: LOAD-SCENARIO
 >saf>sys>new-storage.lisp

Description: None

2.3.3.2.45 SET-INFERIORS-PORT-AND-SUPERIOR-ID

Definition 45

>saf>sys>new-storage.lisp
 Type: Function
 Arguments: (INSTANCE PORT UNIQ-ID)
 Outputs:
 Calls: SIMNET-AGENT
 >saf>objects>simnet-agent.lisp
 SIMNET-AGENT
 >saf>objects>simnet-agent.lisp
 SIMNET-AGENT
 >saf>objects>simnet-agent.lisp
 SET-INFERIORS-PORT-AND-SUPERIOR-ID
 >saf>sys>new-storage.lisp

Called by: SET-INFERIORS-PORT-AND-SUPERIOR-ID
 >saf>sys>new-storage.lisp
 CREATE-STORED-INSTANCE
 >saf>sys>new-storage.lisp

Description: None

2.3.3.2.46 COPY-RELEVANT-IVS

Definition 46

>saf>sys>new-storage.lisp
 Type: Function
 Arguments: (FROM-INST TO-INST)
 Outputs:

Calls: UNIT
>saf>cm>control-measure.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp
OVERLAY
>saf>cm>overlay.lisp

Called by: None
Description: None

2.3.3.2.47 *DELETE-TEXT-FILES-MENU*

Definition 47

>saf>sys>new-storage.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: MULTIPLE-MENU-CHOOSE
>saf>sys>new-storage.lisp
Description: None

2.3.3.2.48 MULTIPLE-MENU-CHOOSE

Definition 48

>saf>sys>new-storage.lisp
Type: Function
Arguments: (CHOICE-LIST &OPTIONAL (LABEL '(STRING Choose Files to Delete
STYLE (SAF MENU NORMAL))))
Outputs:
Calls: *DELETE-TEXT-FILES-MENU*
>saf>sys>new-storage.lisp
Called by: CHOOSE-OVERLAYS-TO-DELETE
>saf>sys>new-storage.lisp
CHOOSE-SCENARIOS-TO-DELETE
>saf>sys>new-storage.lisp
Description: pops up menu and collects script choices from it

2.3.3.2.49 CHOOSE-SCENARIOS-TO-DELETE

Definition 49

>saf>sys>new-storage.lisp
Type: Function
Arguments: (&OPTIONAL (ALL NIL))

Outputs:**Calls:** NAME>saf>sysdcl.lisp
MULTIPLE-MENU-CHOOSE
>saf>sys>new-storage.lisp**Called by:** COM-DELETE-EXERCISES>saf>ui>commands.lisp
COM-DELETE-SCENARIOS
>saf>ui>commands.lisp**Description:** None**2.3.3.2.50 CHOOSE-OVERLAYS-TO-DELETE****Definition 50**

>saf>sys>new-storage.lisp

Type: Function**Arguments:** (&OPTIONAL (ALL NIL))**Outputs:****Calls:** NAME>saf>sysdcl.lisp
MULTIPLE-MENU-CHOOSE
>saf>sys>new-storage.lisp**Called by:** COM-DELETE-OVERLAYS

>saf>ui>commands.lisp

Description: None

2.4 MAP DISPLAY CSC

The map display CSC provides a plan view display of the battlefield. It allows the user to see the battlefield at different zoom levels, at different locations, and with different terrain features displayed. The drawing of the terrain is handled by the update process. A separate process is used because drawing the terrain is a very compute intensive process and you don't want to tie up the user or RUDP process until it finishes. It also allows new terrain drawing commands to interrupt older ones. In addition to displaying the battlefield terrain, the color display shows the position and state of own and other forces on the battlefield and fire activity. By clicking on the units on the map display, you can invoke most of the commands available via the task organization display. What vehicles are displayed is controlled by the current map display view. In the omniscient view, all vehicles are displayed. In the commander's view, all the vehicles on your side plus the enemy vehicles which can be seen by the own vehicles are displayed. Figure 2.4-1 shows the sub-level CSCs of the Map Display CSC.

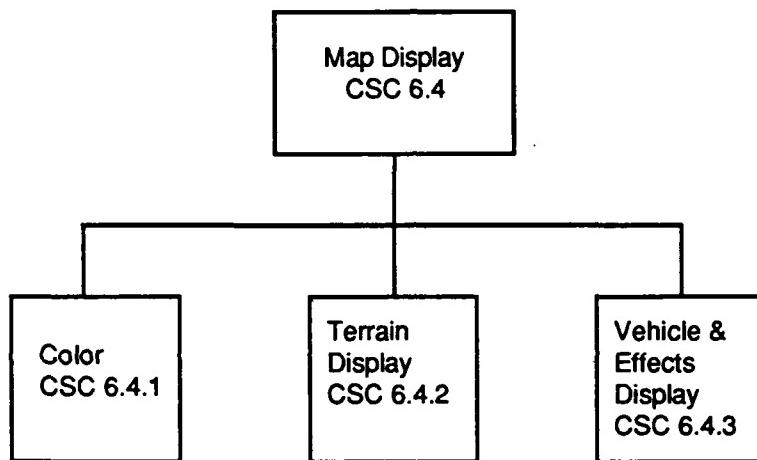


Figure 2.4-1 CSCs of the Map Display CSC

2.4.1 Color CSC

This CSC contains the code for the update process which draws the terrain and refreshes the vehicles when the screen is redrawn. In addition, the update process handles poll requesting by timing when the last request went out and then making sure that the last request has been filled. This CSC also contains the code for the color display menu bar. This CSC contains the following CSUs:

```

sys>update-process.lisp csu
ui>frame-utils.lisp csu
  
```

2.4.1.1 CSU sys>update-process.lisp

This unit contains the main loop for the update process. The update process repeatedly checks the message queues used for interprocess communication, looking for messages from the network process (RUDP), or the user process. It handles these messages by drawing the requested features on the PVD.

The message queues are implemented as the global variables **update-process-queue**, for messages from the user process, and **rudp-receive-queue**, for messages from RUDP. (**network-to-update-process-queue** is no longer used; the update process generates a *cerror* if this queue is found to be non-empty.)

The main loop of the update process handles drawing operations in the following order:

- (1) Input from the user process
- (2) Draw vehicles that need updates
- (3) Draw new effects
- (4) Erase old effects
- (5) Draw some terrain

Terrain is drawn one quadtree node at a time, by the function *draw-map*, except when the *entire* map needs to be drawn; then the quadtree is not needed and terrain is drawn feature by feature, to save time.

Notice that, if there is no terrain to draw, the update process puts itself to sleep with a call to the Symbolics function *process-wait*, at the end of *update-top-level-aux*. The function *update-process-wakeup* revives it.

2.4.1.1.1 *TERRAIN-TO-DRAW*

Definition 1

>saf>sys>update-process.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ANOTHER-TERRAIN-QUAD
 >saf>sys>update-process.lisp
 DRAW-MAP
 >saf>sys>update-process.lisp
 UPDATE-TOP-LEVEL-AUX
 >saf>sys>update-process.lisp

Description: None

2.4.1.1.2 *TERRAIN-COUTOURS-TO-DRAW*

Definition 2

>saf>sys>update-process.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ANOTHER-TERRAIN-QUAD
 >saf>sys>update-process.lisp
 DRAW-MAP
 >saf>sys>update-process.lisp
 UPDATE-TOP-LEVEL-AUX
 >saf>sys>update-process.lisp

Description: None

2.4.1.1.3 *EFFECTS-ERASE-TIME*

Definition 3

>saf>sys>update-process.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: UPDATE-TOP-LEVEL-AUX
 >saf>sys>update-process.lisp
Description: number of seconds effects remain on screen before erasure

2.4.1.1.4 *UPDATE-PROCESS-WAIT-TIME*

Definition 4

>saf>sys>update-process.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: UPDATE-TOP-LEVEL-AUX
 >saf>sys>update-process.lisp
 UPDATE-PROCESS-WAKE-UP
 >saf>sys>update-process.lisp
Description: when the update process put itself into a wait state

2.4.1.1.5 *UPDATE-PROCESS-LAST-CYCLE*

Definition 5

>saf>sys>update-process.lisp
Type: Parameter
Arguments: ()
Outputs:
Calls: None
Called by: UPDATE-TOP-LEVEL-AUX
 >saf>sys>update-process.lisp
 (METHOD MAKE-INSTANCE SAF AFTER)
 >saf>ui>frame.lisp
 MAKE-UPDATE-PROCESS
 >saf>ui>processes.lisp
Description: None

2.4.1.1.6 *UPDATE-PROCESS-MAX-WAIT-TIME*

Definition 6

>saf>sys>update-process.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None

Called by: UPDATE-PROCESS-WAKE-UP

>saf>sys>update-process.lisp

Description: max number of seconds update process will sleep

2.4.1.1.7 *TIME-LAST-POLLED*

Definition 7

>saf>sys>update-process.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: UPDATE-TOP-LEVEL-AUX

>saf>sys>update-process.lisp

Description: time the butterfly was last polled to get vehicle positions

2.4.1.1.8 UPDATE-PROCESS-WAKE-UP

Definition 8

>saf>sys>update-process.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *INTERFACE-TO-UPDATE-PROCESS-QUEUE*

>saf>sys>vars.lisp

RUDP-RECEIVE-QUEUE

>saf>rudp>vars.lisp

UPDATE-PROCESS-WAIT-TIME

>saf>sys>update-process.lisp

UPDATE-PROCESS-MAX-WAIT-TIME

>saf>sys>update-process.lisp

Called by: UPDATE-TOP-LEVEL-AUX

>saf>sys>update-process.lisp

Description: decides when to make the update process runnable

2.4.1.1.9 UPDATE-TOP-LEVEL

Definition 9

>saf>sys>update-process.lisp

Type: Function

Arguments: ()

Outputs:

Calls: *WHERE-ARE-THEY-POLL-WAIT*

>saf>sys>vars.lisp

STOP-UPDATE-PROCESS

>saf>sys>vars.lisp

UPDATE-TOP-LEVEL-AUX

>saf>sys>update-process.lisp

Called by: (METHOD MAKE-INSTANCE SAF AFTER)

>saf>ui>frame.lisp
MAKE-UPDATE-PROCESS
>saf>ui>processes.lisp

Description: top level function for the update process

2.4.1.1.10 UPDATE-TOP-LEVEL-AUX

Definition 10

>saf>sys>update-process.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *QUAD-TREE*
>map>terrain-vars.lisp
VIEW-VEHICLE-ID
>saf>sys>vars.lisp
GODS-EYE-VIEW
>saf>sys>vars.lisp
NON-GODS-EYE-VIEW
>saf>sys>vars.lisp
COMMANDERS-EYE-VIEW
>saf>sys>vars.lisp
WHERE-ARE-THEY-POLL-WAIT
>saf>sys>vars.lisp
WHERE-ARE-THEY-POLL-FREQUENCY
>saf>sys>vars.lisp
INTERFACE-TO-UPDATE-PROCESS-QUEUE
>saf>sys>vars.lisp
NETWORK-TO-UPDATE-PROCESS-QUEUE
>saf>sys>vars.lisp
DEQUEUE
>saf>sys>macros.lisp
POLL
>saf>network>vars.lisp
STANDALONEP
>saf>network>connection.lisp
PROCESS-RECEIVED-PACKETS
>saf>rudp>incoming.lisp
NET-MSG
>saf>rudp>outgoing.lisp
GET-VEHICLE
>saf>simnet-objects>vehicle-tracking.lisp
ERASE-ELASPED-EFFECTS
>saf>simnet-objects>draw-effects.lisp
TERRAIN-TO-DRAW
>saf>sys>update-process.lisp
TERRAIN-CONTOURS-TO-DRAW
>saf>sys>update-process.lisp
EFFECTS-ERASE-TIME
>saf>sys>update-process.lisp
UPDATE-PROCESS-WAIT-TIME
>saf>sys>update-process.lisp

UPDATE-PROCESS-LAST-CYCLE
>saf>sys>update-process.lisp
TIME-LAST-POLLED
>saf>sys>update-process.lisp
UPDATE-PROCESS-WAKE-UP
>saf>sys>update-process.lisp
PROCESS-USER-COMMAND
>saf>sys>update-process.lisp
PROCESS-NETWORK-COMMAND
>saf>sys>update-process.lisp
DRAW-ANOTHER-TERRAIN-QUAD
>saf>sys>update-process.lisp
Called by: UPDATE-TOP-LEVEL
>saf>sys>update-process.lisp
Description: the guts of the update process top level processing

2.4.1.11 PROCESS-USER-COMMAND

Definition 11

>saf>sys>update-process.lisp
Type: Function
Arguments: (COMMAND ARGUMENTS)
Outputs:
Calls: *ZOOM-LEVELS*
>map>zoom-levels.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
PVD-LEGEND
>saf>sys>vars.lisp
PROCESS-NEW-MAP-OPTIONS
>saf>sys>update-process.lisp
DRAW-MAP
>saf>sys>update-process.lisp
Called by: UPDATE-TOP-LEVEL-AUX
>saf>sys>update-process.lisp
Description: top level function for the update process

2.4.1.12 POLL-COMPLETED

Definition 12

>saf>sys>update-process.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *MAX-VEHICLE-ID*
>saf>sys>constants.lisp
WHERE-ARE-THEY-POLL-WAIT
>saf>sys>vars.lisp
ACCESS-VEHICLE-INSTANCE
>saf>simnet-objects>macros.lisp

ACCESS-NEW-FLAG
>saf>simnet-objects>macros.lisp
SET-NEW-FLAG
>saf>simnet-objects>macros.lisp
ACCESS-PAINTED-FLAG
>saf>simnet-objects>macros.lisp
GET-VEHICLE-HOLDER
>saf>simnet-objects>vehicle-tracking.lisp

Called by: PROCESS-VEHICLE-POSITION-POLL-COMPLETED-PKT
>saf>rudp>handle-incoming.lisp

Description: None

2.4.1.1.13 PROCESS-NETWORK-COMMAND

Definition 13

>saf>sys>update-process.lisp

Type: Function

Arguments: (COMMAND ARGUMENTS)

Outputs:

Calls: None

Called by: UPDATE-TOP-LEVEL-AUX

>saf>sys>update-process.lisp

Description: Process a request from the network process

2.4.1.1.14 PROCESS-NEW-MAP-OPTIONS

Definition 14

>saf>sys>update-process.lisp

Type: Function

Arguments: (MAP-OPTIONS)

Outputs:

Calls: *CURRENT-ZOOM-LEVEL*

>map>zoom-levels.lisp

CURRENT-SCALE

>map>zoom-levels.lisp

CURRENT-ZOOM-LEVEL

>map>zoom-levels.lisp

TERRAIN-OPTIONS

>saf>sys>vars.lisp

DRAW-MAP

>saf>sys>update-process.lisp

Called by: PROCESS-USER-COMMAND

>saf>sys>update-process.lisp

Description: None

2.4.1.1.15 *SOIL-TYPES*

Definition 15

>saf>sys>update-process.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ANOTHER-TERRAIN-QUAD
 >saf>sys>update-process.lisp
 DRAW-MAP
 >saf>sys>update-process.lisp
Description: None

2.4.1.1.16 DRAW-MAP

Definition 16

>saf>sys>update-process.lisp
Type: Function
Arguments: (&OPTIONAL (NEW-SCALE NIL))
Outputs:
Calls: *QUAD-TREE*
 >map>terrain-vars.lisp
 ZOOM-LEVELS
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
 ZOOM-LEVELS
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
 QUADS-TO-DRAW
 >map>quadtree-search.lisp
 PVD-DISPLAY
 >saf>sys>vars.lisp
 PVD-LEGEND
 >saf>sys>vars.lisp
 BMI-PROGRAM
 >saf>sys>vars.lisp
 TERRAIN-OPTIONS
 >saf>sys>vars.lisp
 REDRAW-VEHICLES
 >saf>simnet-objects>vehicle-tracking.lisp
 TERRAIN-TO-DRAW
 >saf>sys>update-process.lisp
 TERRAIN-COUTOURS-TO-DRAW
 >saf>sys>update-process.lisp
 SOIL-TYPES
 >saf>sys>update-process.lisp
 DRAW-SANDBOX
 >saf>sandbox>sandbox.lisp
 REDRAW-OVERLAYS
 >saf>cm>overlay.lisp

Called by: PROCESS-NEW-MAP-OPTIONS
>saf>sys>update-process.lisp
PROCESS-USER-COMMAND
>saf>sys>update-process.lisp
Description: None

2.4.1.1.17 DRAW-ANOTHER-TERRAIN-QUAD

Definition 17

>saf>sys>update-process.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *ZOOM-LEVELS*
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
DRAW-ALL-TERRAIN
>map>draw-terrain.lisp
DRAW-TERRAIN
>map>draw-terrain.lisp
PVD-DISPLAY
>saf>sys>vars.lisp
TERRAIN-TO-DRAW
>saf>sys>update-process.lisp
TERRAIN-CONTOURS-TO-DRAW
>saf>sys>update-process.lisp
SOIL-TYPES
>saf>sys>update-process.lisp
Called by: UPDATE-TOP-LEVEL-AUX
>saf>sys>update-process.lisp
Description: None

2.4.1.2 CSU ui>frame-utils.lisp

This unit defines some pane-types for use in the color display window and some routines to handle highlighting of menu-bar items.

2.4.1.2.1 MAP-WINDOW

Definition 1

>saf>ui>frame-utils.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: UTM-GRID-MIXIN
>map>utm-grid-mixin.lisp

Called by: None
Description: None

2.4.1.2.2 MAP-WINDOW

Definition 2

>saf>ui>frame-utils.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: PVD PROGRAM-FRAME-OPTIONS
>saf>ui>frame.lisp
Description: None

2.4.1.2.3 MAP-LEGEND

Definition 3

>saf>ui>frame-utils.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.1.2.4 MAP-LEGEND

Definition 4

>saf>ui>frame-utils.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: PVD PROGRAM-FRAME-OPTIONS
>saf>ui>frame.lisp
Description: None

2.4.1.2.5 HIGHLIGHT-BUTTON

Definition 5

>saf>ui>frame-utils.lisp
Type: Function
Arguments: (PROGRAM MENU BUTTON-STRING)
Outputs:
Calls: HIGHLIGHT-BUTTON-1
>saf>ui>frame-utils.lisp

Called by: (METHOD COM-TERRAIN-OPTIONS-INTERNAL PVD)

No Source File Record

(METHOD COM-REFRESH-INTERNAL PVD)

No Source File Record

(METHOD COM-RESCALE-INTERNAL PVD)

No Source File Record

(METHOD COM-ZOOM-OUT-INTERNAL PVD)

No Source File Record

(METHOD COM-PAN-INTERNAL PVD)

No Source File Record

(METHOD COM-ZOOM-IN-INTERNAL PVD)

No Source File Record

DEFINE-PVD-MENU-COMMAND

>saf>ui>commands.lisp

Description: None

2.4.1.2.6 HIGHLIGHT-BUTTON-1

Definition 6

>saf>ui>frame-utils.lisp

Type: Function

Arguments: (WINDOW BUTTON-STRING)

Outputs:

Calls: None

Called by: SWITCH-ORIENTATION-HIGHLIGHT

>saf>interface>formations.lisp

HIGHLIGHT-SELECTION

>saf>interface>model-menu.lisp

SWITCH-HIGHLIGHT

>saf>interface>model-menu.lisp

HIGHLIGHT-BUTTON

>saf>ui>frame-utils.lisp

Description: None

2.4.2 Terrain Display CSC

This CSC contains the code to draw the terrain and to access the quadtree terrain representation. The access routines are also used by the route code. This CSC contains the following CSUs:

map>clip.lisp csu

map>color-map.lisp csu

map>control.lisp csu

map>draw-wide-curve.lisp

map>grids.lisp csu

map>intersection.lisp csu

map>legend.lisp csu

map>quadtree-search.lisp csu

map>scalable-window.lisp csu

map>terrain-vars.lisp csu

map>utilities.lisp csu
map>utm-grid-mixin.lisp csu
map>vectors.lisp csu
map>zoom-levels.lisp csu

2.4.2.1 CSU map>clip.lisp

This unit contains the line clipping routines which are used by the drawing routines as well as the search routines. The functions calculate the intersection of a line segment with given endpoints and a rectangle with given corners. These routines correspond to the Nicholl, Lee, Nicholl algorithm from the 1987 SIGGRAPH proceedings. The lines forming the rectangle divide the plane into 9 regions, like a tic-tac-toe board. Functions determine if endpoints of the segment lie in certain combinations of these 9 regions; this information is then used to calculate the intersection segment. The algorithm uses rotations and reflections to reduce the number of cases that have to be handled.

2.4.2.1.1 ROTATE-90-C

Definition 1

>map>clip.lisp
Type: Macro
Arguments: (X Y)
Outputs:
Calls: ROTATE-90-C
 >map>clip.lisp
Called by: P2-LEFT
 >map>clip.lisp
 CENTER-COLUMN
 >map>clip.lisp
 ROTATE-90-C
 >map>clip.lisp
Description: None

2.4.2.1.2 ROTATE-180-C

Definition 2

>map>clip.lisp
Type: Macro
Arguments: (X Y)
Outputs:
Calls: ROTATE-180-C
 >map>clip.lisp
Called by: INSIDE
 >map>clip.lisp
 CLIP
 >map>clip.lisp
 ROTATE-180-C
 >map>clip.lisp
Description: None

2.4.2.1.3 ROTATE-270-C

Definition 3

>map>clip.lisp
Type: Macro
Arguments: (X Y)
Outputs:
Calls: ROTATE-270-C
>map>clip.lisp
Called by: P2-LEFT
>map>clip.lisp
CENTER-COLUMN
>map>clip.lisp
ROTATE-270-C
>map>clip.lisp
Description: None

2.4.2.1.4 REFLECT-X-MINUS-Y

Definition 4

>map>clip.lisp
Type: Macro
Arguments: (X Y)
Outputs:
Calls: REFLECT-X-MINUS-Y
>map>clip.lisp
Called by: TOP-LEFT-CORNER
>map>clip.lisp
REFLECT-X-MINUS-Y
>map>clip.lisp
Description: None

2.4.2.1.5 REFLECT-X-AXIS

Definition 5

>map>clip.lisp
Type: Macro
Arguments: (Y)
Outputs:
Calls: REFLECT-X-AXIS
>map>clip.lisp
Called by: LEFT-EDGE
>map>clip.lisp
LEFT-COLUMN
>map>clip.lisp
REFLECT-X-AXIS
>map>clip.lisp
Description: None

2.4.2.1.6 *DISPLAY*

Definition 6

>map>clip.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: INSIDE
 >map>clip.lisp
 P2-BOTTOM
 >map>clip.lisp
 LEFT-EDGE
 >map>clip.lisp
 LEFT-BOTTOM-REGION
 >map>clip.lisp
 TOP-LEFT-CORNER
 >map>clip.lisp
 LEFT-COLUMN
 >map>clip.lisp
 CLIP
 >map>clip.lisp
Description: None

2.4.2.1.7 CLIP

Definition 7

>map>clip.lisp
Type: Function
Arguments: (X-LEFT Y-TOP X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)
Outputs:
Calls: ROTATE-180-C
 >map>clip.lisp
 DISPLAY
 >map>clip.lisp
 LEFT-COLUMN
 >map>clip.lisp
 CENTER-COLUMN
 >map>clip.lisp
Called by: CLIP-POINTS-TO-WINDOW
 >map>draw-terrain.lisp
 GET-THIS-NODE
 >map>quadtree-search.lisp
 POSSIBLE-INTERSECTION
 >map>intersection.lisp
 FIND-NEAREST-ROAD-SEGMENT
 >saf>cm>road-routes.lisp
Description: None

2.4.2.1.8 LEFT-COLUMN

Definition 8

>map>clip.lisp
Type: Function
Arguments: (X-LEFT Y-TOP X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)
Outputs:
Calls: REFLECT-X-AXIS
>map>clip.lisp
DISPLAY
>map>clip.lisp
TOP-LEFT-CORNER
>map>clip.lisp
LEFT-EDGE
>map>clip.lisp
Called by: CLIP
>map>clip.lisp
Description: None

2.4.2.1.9 TOP-LEFT-CORNER

Definition 9

>map>clip.lisp
Type: Function
Arguments: (X-LEFT Y-TOP X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)
Outputs:
Calls: REFLECT-X-MINUS-Y
>map>clip.lisp
DISPLAY
>map>clip.lisp
LEFT-BOTTOM-REGION
>map>clip.lisp
Called by: LEFT-COLUMN
>map>clip.lisp
Description: None

2.4.2.1.10 LEFT-BOTTOM-REGION

Definition 10

>map>clip.lisp
Type: Function
Arguments: (X-LEFT IGNORE X-RIGHT Y-BOTTOM X1 Y1 X2 Y2 REL-X2 REL-Y2 LEFT-PRODUCT)
Outputs:
Calls: *DISPLAY*
>map>clip.lisp
Called by: TOP-LEFT-CORNER
>map>clip.lisp
Description: None

2.4.2.1.11 LEFT-EDGE

Definition 11

>map>clip.lisp

Type: Function

Arguments: (X-LEFT Y-TOP X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)

Outputs:

Calls: REFLECT-X-AXIS

>map>clip.lisp

DISPLAY

>map>clip.lisp

P2-BOTTOM

>map>clip.lisp

Called by: CENTER-COLUMN

>map>clip.lisp

LEFT-COLUMN

>map>clip.lisp

Description: None

2.4.2.1.12 P2-BOTTOM

Definition 12

>map>clip.lisp

Type: Function

Arguments: (X-LEFT IGNORE X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)

Outputs:

Calls: *DISPLAY*

>map>clip.lisp

Called by: LEFT-EDGE

>map>clip.lisp

Description: None

2.4.2.1.13 CENTER-COLUMN

Definition 13

>map>clip.lisp

Type: Function

Arguments: (X-LEFT Y-TOP X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)

Outputs:

Calls: ROTATE-90-C

>map>clip.lisp

ROTATE-270-C

>map>clip.lisp

LEFT-EDGE

>map>clip.lisp

INSIDE

>map>clip.lisp

Called by: CLIP

>map>clip.lisp

Description: None

2.4.2.1.14 P2-LEFT-TOP

Definition 14

>map>clip.lisp
Type: Function
Arguments: (X-LEFT Y-TOP IGNORE IGNORE X1 Y1 X2 Y2)
Outputs:
Calls: None
Called by: P2-LEFT
 >map>clip.lisp
Description: None

2.4.2.1.15 P2-LEFT

Definition 15

>map>clip.lisp
Type: Function
Arguments: (X-LEFT Y-TOP X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)
Outputs:
Calls: ROTATE-90-C
 >map>clip.lisp
 ROTATE-270-C
 >map>clip.lisp
 P2-LEFT-TOP
 >map>clip.lisp
Called by: INSIDE
 >map>clip.lisp
Description: None

2.4.2.1.16 INSIDE

Definition 16

>map>clip.lisp
Type: Function
Arguments: (X-LEFT Y-TOP X-RIGHT Y-BOTTOM X1 Y1 X2 Y2)
Outputs:
Calls: ROTATE-180-C
 >map>clip.lisp
 DISPLAY
 >map>clip.lisp
 P2-LEFT
 >map>clip.lisp
Called by: CENTER-COLUMN
 >map>clip.lisp
Description: None

2.4.2.2 CSU map>color-map.lisp

This unit contains the routines that generate the color alus for the Symbolics color system for display of the terrain. The alu information is stored as part of the terrain quadtree and the alus are generated when the color window is created or a new terrain database is loaded.

Terrain, vehicles, effects and overlays are displayed in separate image planes, each corresponding to a bitfield within the 8 bit color system pixels. The terrain is displayed in the lower 3 bits. See CSU color-window>color-alus.lisp for details on the image plane approach. Color alus are discussed in detail in the Symbolics documentation.

2.4.2.2.1 *OVERLAY-ALU*

Definition 1

>map>color-map.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.2.2 *ERASE-OVERLAY-ALU*

Definition 2

>map>color-map.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.2.3 *OVERLAY-ALU*

Definition 3

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: SELECT-POLYGON
 >map>control.lisp
 RUBBER-LINE
 >map>control.lisp
 ROTATABLE-RECTANGLE
 >map>control.lisp
 (PRESENTATION-FUNCTION CONTROL-MEASURE PRINTER)
 No Source File Record
 DRAW-BRIDGES
 >map>draw-terrain.lisp
 (METHOD DRAW-GRIDS UTM-GRID-MIXIN)
 >map>grids.lisp
 MAKE-COLOR-ALUS
 >map>color-map.lisp
 SETUP-COLOR-ALUS
 >map>color-map.lisp

SETUP-COLOR-ALUS
>saf>color-window>color-alus.lisp
(METHOD INSERT-POINT-AFTER GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD DELETE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD MOVE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD DRAW GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD INSERT-POINT-BEFORE LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-AFTER LINE)
>saf>cm>line.lisp
(METHOD DELETE-POINT LINE)
>saf>cm>line.lisp
(METHOD MOVE-POINT LINE)
>saf>cm>line.lisp
(METHOD DRAW LINE)
>saf>cm>line.lisp
(METHOD DRAW CM-POINT)
>saf>cm>point.lisp
MAKE-ROUTE
>saf>cm>route.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD DELETE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD DRAW ROUTE)
>saf>cm>route.lisp
GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
(METHOD DRAW CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp

Description: None

2.4.2.2.4 *ERASE-OVERLAY-ALU*

Definition 4

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None

Called by: SELECT-POLYGON
>map>control.lisp
RUBBER-LINE
>map>control.lisp
ROTATABLE-RECTANGLE
>map>control.lisp
DRAW-UNIT-SYMBOL
>map>control.lisp
(METHOD EDIT CONTROL-MEASURE)
>map>control.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>saf>color-window>color-alus.lisp
(METHOD INSERT-POINT-AFTER GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD DELETE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD MOVE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD ERASE GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD INSERT-POINT-BEFORE LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-AFTER LINE)
>saf>cm>line.lisp
(METHOD DELETE-POINT LINE)
>saf>cm>line.lisp
(METHOD MOVE-POINT LINE)
>saf>cm>line.lisp
(METHOD ERASE LINE)
>saf>cm>line.lisp
(METHOD ERASE CM-POINT)
>saf>cm>point.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD DELETE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD ERASE ROUTE)
>saf>cm>route.lisp
GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
(METHOD ERASE CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD DRAW-AS-FIRST-POINT CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp

Description: None

2.4.2.2.5 *SOIL-ALU*

Definition 5

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-WATER-OR-LAND-TRIANGLES
>map>draw-terrain.lisp
DRAW-WATER-OR-LAND-TRIANGLES-MAYBE
>map>draw-terrain.lisp
(METHOD DRAW-GRIDS UTM-GRID-MIXIN)
>map>grids.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp
Description: None

2.4.2.2.6 *OBJECT-ALU*

Definition 6

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-OBJECTS
>map>draw-terrain.lisp
DRAW-LEGEND-BUILDINGS
>map>legend.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp
Description: None

2.4.2.2.7 *TREE-ALU*

Definition 7

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-CANOPIES
>map>draw-terrain.lisp
DRAW-CANOPY-TRIANGLES
>map>draw-terrain.lisp
DRAW-TREES
>map>draw-terrain.lisp

(METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp

Description: None

2.4.2.2.8 *SOIL-ROAD-ALU*

Definition 8

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-ROADS
>map>draw-terrain.lisp
DRAW-ROADS
>map>draw-terrain.lisp
(METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp

Description: None

2.4.2.2.9 *SOIL-RAIL-ALU*

Definition 9

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-RAILS
>map>draw-terrain.lisp
DRAW-RAILS
>map>draw-terrain.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp

Description: None

2.4.2.2.10 *SOIL-WATER-ALU*

Definition 10

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-RIVERS
 >map>draw-terrain.lisp
 DRAW-WATER
 >map>draw-terrain.lisp
 (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
 MAKE-COLOR-ALUS
 >map>color-map.lisp
 SETUP-COLOR-ALUS
 >map>color-map.lisp

Description: None

2.4.2.2.11 *SOIL-MUCK-ALU*

Definition 11

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-RIVERS
 >map>draw-terrain.lisp
 DRAW-WATER-OR-LAND-TRIANGLES
 >map>draw-terrain.lisp
 DRAW-WATER-OR-LAND-TRIANGLES-MAYBE
 >map>draw-terrain.lisp
 DRAW-WATER
 >map>draw-terrain.lisp
 (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
 MAKE-COLOR-ALUS
 >map>color-map.lisp
 SETUP-COLOR-ALUS
 >map>color-map.lisp

Description: None

2.4.2.2.12 *LOW-CONTOUR-ALU*

Definition 12

>map>color-map.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None

Called by: DRAW-ALL-CONTOURS

>map>draw-terrain.lisp
DRAW-CONTOURS
>map>draw-terrain.lisp
(METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp

Description: None

2.4.2.2.13 *HIGH-CONTOUR-ALU*

Definition 13

>map>color-map.lisp
Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: DRAW-ALL-CONTours

>map>draw-terrain.lisp
DRAW-CONTOURS
>map>draw-terrain.lisp
(METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp

Description: None

2.4.2.2.14 *LEGEND-TEXT-ALU*

Definition 14

>map>color-map.lisp
Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: DRAW-LEGEND-BOX-AND-LINE

>map>legend.lisp
(METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>map>color-map.lisp

Description: None

2.4.2.2.15 'MAKE-AN-ALU

Definition 15

>map>color-map.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.2.16 MAKE-AN-ALU

Definition 16

>map>color-map.lisp
Type: Function
Arguments: (SIZE POSITION FILL-WITHIN-FIELD)
Outputs:
Calls: None
Called by: MAKE-COLOR-ALUS
 >map>color-map.lisp
 SETUP-COLOR-ALUS
 >map>color-map.lisp
 MAKE-ALU-AND-SET-COLOR-MAP
 >map>color-map.lisp
 SETUP-COLOR-ALUS
 >saf>color-window>color-alus.lisp
Description: None

2.4.2.2.17 'MAKE-ALU-AND-SET-COLOR-MAP

Definition 17

>map>color-map.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.2.18 MAKE-ALU-AND-SET-COLOR-MAP

Definition 18

>map>color-map.lisp
Type: Function
Arguments: (SIZE POSITION FILL-WITHIN-FIELD DEC-RED DEC-GREEN DEC-BLUE)
Outputs:
Calls: MAKE-AN-ALU
 >map>color-map.lisp

Called by: SETUP-COLOR-ALUS
>map>color-map.lisp
SETUP-COLOR-ALUS
>saf>color-window>color-alus.lisp
Description: None

2.4.2.2.19 SETUP-COLOR-ALUS

Definition 19

>map>color-map.lisp
Type: Function
Arguments: (&OPTIONAL (DATABASE ft-knox))
Outputs:
Calls: *OVERLAY-ALU*
 >map>color-map.lisp
 ERASE-OVERLAY-ALU
 >map>color-map.lisp
 SOIL-ALU
 >map>color-map.lisp
 OBJECT-ALU
 >map>color-map.lisp
 TREE-ALU
 >map>color-map.lisp
 SOIL-ROAD-ALU
 >map>color-map.lisp
 SOIL-RAIL-ALU
 >map>color-map.lisp
 SOIL-WATER-ALU
 >map>color-map.lisp
 SOIL-MUCK-ALU
 >map>color-map.lisp
 LOW-CONTOUR-ALU
 >map>color-map.lisp
 HIGH-CONTOUR-ALU
 >map>color-map.lisp
 LEGEND-TEXT-ALU
 >map>color-map.lisp
 MAKE-AN-ALU
 >map>color-map.lisp
 MAKE-ALU-AND-SET-COLOR-MAP
 >map>color-map.lisp

Called by: None
Description: None

2.4.2.2.20 MAKE-COLOR-ARRAY

Definition 20

>map>color-map.lisp
Type: Function
Arguments: ()
Outputs:
Calls: None

Called by: None
Description: None

2.4.2.2.21 MAKE-COLOR-ALUS

Definition 21

>map>color-map.lisp
Type: Function
Arguments: (COLOR-MAP)
Outputs:
Calls: *OVERLAY-ALU*
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
SOIL-ALU
>map>color-map.lisp
OBJECT-ALU
>map>color-map.lisp
TREE-ALU
>map>color-map.lisp
SOIL-ROAD-ALU
>map>color-map.lisp
SOIL-RAIL-ALU
>map>color-map.lisp
SOIL-WATER-ALU
>map>color-map.lisp
SOIL-MUCK-ALU
>map>color-map.lisp
LOW-CONTOUR-ALU
>map>color-map.lisp
HIGH-CONTOUR-ALU
>map>color-map.lisp
LEGEND-TEXT-ALU
>map>color-map.lisp
MAKE-AN-ALU
>map>color-map.lisp
SET-COLOR-MAP
>map>color-map.lisp

Called by: (METHOD UPDATE SCALABLE-WINDOW)

>map>scalable-window.lisp

Description: None

2.4.2.2.22 SET-COLOR-MAP

Definition 22

>map>color-map.lisp
Type: Function
Arguments: (COLOR-ARRAY)
Outputs:
Calls: None

Called by: MAKE-COLOR-ALUS
>map>color-map.lisp
Description: None

2.4.2.3 CSU map>control.lisp

This unit contains routines for generation of default map control measures.
The SAF system no longer uses these control measures, as it now creates its own, more specific, measures, using the control-measure object defined in CSU control-measure.lisp, and related code in the control measures CSC.

2.4.2.3.1 *UNIT-TYPES*

Definition 1

>map>control.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: UNIT-BOUNDARY
>map>control.lisp
BATTLE-POSITION
>map>control.lisp
Description: None

2.4.2.3.2 *AREA-TYPES*

Definition 2

>map>control.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: AREA-CONTROL-MEASURE
>map>control.lisp
Description: None

2.4.2.3.3 *LINE-TYPES*

Definition 3

>map>control.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: LINE-CONTROL-MEASURE
>map>control.lisp
Description: None

2.4.2.3.4 *CONTROL-MEASURE-MENU-ITEMS***Definition 4**

>map>control.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: AREA-CONTROL-MEASURE
>map>control.lisp
BATTLE-POSITION
>map>control.lisp
LINE-CONTROL-MEASURE
>map>control.lisp
UNIT-BOUNDARY
>map>control.lisp
ARROW-CONTROL-MEASURE
>map>control.lisp
EDIT-CONTROL-MEASURES
>map>control.lisp
Called by: CONTROL-MEASURES-MENU
>map>control.lisp
Description: None

2.4.2.3.5 *CONTROL-MEASURES***Definition 5**

>map>control.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-CONTROL-MEASURES
>map>control.lisp
(METHOD EDIT CONTROL-MEASURE)
>map>control.lisp
(METHOD INIT CONTROL-MEASURE AFTER)
>map>control.lisp
Description: None

2.4.2.3.6 CONTROL-MEASURE**Definition 6**

>map>control.lisp
Type: DEFINE-PRESENTATION-TYPE
Arguments: ()
Outputs:
Calls: None
Called by: LINE-CONTROL-MEASURE
>map>control.lisp
ARROW-CONTROL-MEASURE
>map>control.lisp
UNIT-BOUNDARY

>map>control.lisp
AREA-CONTROL-MEASURE
>map>control.lisp
BATTLE-POSITION
>map>control.lisp
DRAW-ALL-CONTROL-MEASURES
>map>control.lisp
EDIT-CONTROL-MEASURES
>map>control.lisp
ARROW-CONTROL-MEASURE
>map>control.lisp
UNIT-BOUNDARY
>map>control.lisp
LINE-CONTROL-MEASURE
>map>control.lisp
BATTLE-POSITION
>map>control.lisp
AREA-CONTROL-MEASURE
>map>control.lisp

Description: None

2.4.2.3.7 'CONTROL-MEASURE

Definition 7

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.8 CONTROL-MEASURE

Definition 8

>map>control.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.9 'AREA-CONTROL-MEASURE

Definition 9

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.4.2.3.10 AREA-CONTROL-MEASURE

Definition 10

>map>control.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: CONTROL-MEASURE
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.11 'BATTLE-POSITION

Definition 11

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.12 BATTLE-POSITION

Definition 12

>map>control.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: CONTROL-MEASURE
 >map>control.lisp
 AREA-CONTROL-MEASURE
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.13 'LINE-CONTROL-MEASURE

Definition 13

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.4.2.3.14 LINE-CONTROL-MEASURE

Definition 14

>map>control.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: CONTROL-MEASURE
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.15 'UNIT-BOUNDARY

Definition 15

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.16 UNIT-BOUNDARY

Definition 16

>map>control.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: CONTROL-MEASURE
 >map>control.lisp
 LINE-CONTROL-MEASURE
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.17 'ARROW-CONTROL-MEASURE

Definition 17

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.4.2.3.18 ARROW-CONTROL-MEASURE

Definition 18

>map>control.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: CONTROL-MEASURE
 >map>control.lisp
 LINE-CONTROL-MEASURE
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.19 (METHOD INIT CONTROL-MEASURE AFTER)

Definition 19

>map>control.lisp
Type: Method
Arguments: (IGNORE) .
Outputs:
Calls: *CONTROL-MEASURES*
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.20 (METHOD EDIT CONTROL-MEASURE)

Definition 20

>map>control.lisp
Type: Method
Arguments: (WINDOW)
Outputs:
Calls: *ERASE-OVERLAY-ALU*
 >map>color-map.lisp
 MAP-OPTIONS
 >map>draw-terrain.lisp
 CONTROL-MEASURES
 >map>control.lisp
 DRAW-ALL-CONTROL-MEASURES
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.21 (METHOD DRAW AREA-CONTROL-MEASURE)

Definition 21

>map>control.lisp
Type: Method
Arguments: (WINDOW ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-GRAFICS
 >map>utilities.lisp
 WITH-FAST-MAP-GRAFICS
 >map>utilities.lisp
Called by: None
Description: None

**2.4.2.3.22 (METHOD ENTER-NEW-CONTROL-MEASURE AREA-
CONTROL-MEASURE)**

Definition 22

>map>control.lisp
Type: Method
Arguments: (WINDOW)
Outputs:
Calls: AREA-CONTROL-MEASURE
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.23 (METHOD DRAW BATTLE-POSITION AFTER)

Definition 23

>map>control.lisp
Type: Method
Arguments: (WINDOW ALU)
Outputs:
Calls: VEC-ROTATE
 >map>vectors.lisp
 VEC-ADD
 >map>vectors.lisp
 VEC-SUB
 >map>vectors.lisp
 DRAW-UNIT-SYMBOL
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.24 (METHOD ENTER-NEW-CONTROL-MEASURE BATTLE-POSITION)

Definition 24

>map>control.lisp
Type: Method
Arguments: (WINDOW)
Outputs:
Calls: BATTLE-POSITION
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.25 (METHOD DRAW LINE-CONTROL-MEASURE)

Definition 25

>map>control.lisp
Type: Method
Arguments: (WINDOW ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-GRAFICS
 >map>utilities.lisp
 WITH-FAST-MAP-GRAFICS
 >map>utilities.lisp
 VEC-NORMALIZE
 >map>vectors.lisp
 VEC-ADD
 >map>vectors.lisp
 VEC-SUB
 >map>vectors.lisp
 VEC-SCALE
 >map>vectors.lisp
 DRAW-1-SCALLOPED-LINE
 >map>control.lisp
 DRAW-2-SCALLOPED-LINES
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.26 (METHOD ENTER-NEW-CONTROL-MEASURE LINE-CONTROL-MEASURE)

Definition 26

>map>control.lisp
Type: Method
Arguments: (WINDOW)
Outputs:
Calls: LINE-CONTROL-MEASURE
 >map>control.lisp

Called by: None
Description: None

2.4.2.3.27 (METHOD DRAW UNIT-BOUNDARY AFTER) Definition 27

>map>control.lisp
Type: Method
Arguments: (WINDOW ALU)
Outputs:
Calls: DRAW-UNIT-SYMBOL
 >map>control.lisp
 FIND-CENTER-POINT
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.28 (METHOD ENTER-NEW-CONTROL-MEASURE UNIT- BOUNDARY)

Definition 28

>map>control.lisp
Type: Method
Arguments: (WINDOW)
Outputs:
Calls: UNIT-BOUNDARY
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.29 (METHOD DRAW ARROW-CONTROL-MEASURE) Definition 29

>map>control.lisp
Type: Method
Arguments: (WINDOW ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-GRAFICS
 >map>utilities.lisp
 WITH-FAST-MAP-GRAFICS
 >map>utilities.lisp
 FIND-CENTER-POINT
 >map>control.lisp
 DRAW-ARROW
 >map>control.lisp
Called by: None
Description: None

2.4.2.3.30 (METHOD ENTER-NEW-CONTROL-MEASURE ARROW- CONTROL-MEASURE)

Definition 30

>map>control.lisp
Type: Method
Arguments: (WINDOW)
Outputs:
Calls: ARROW-CONTROL-MEASURE
>map>control.lisp
Called by: None
Description: None

2.4.2.3.31 AREA-CONTROL-MEASURE

Definition 31

>map>control.lisp
Type: Function
Arguments: (WINDOW &OPTIONAL OLD-NAME (TYPE (CDAR *AREA-TYPES*))
(OWN-WINDOW NIL))
Outputs:
Calls: ROTATABLERECTANGLE
>map>control.lisp
Called by: BATTLE-POSITION
>map>control.lisp
(METHOD ENTER-NEW-CONTROL-MEASURE AREA-CONTROL-
MEASURE)
>map>control.lisp
AREA-CONTROL-MEASURE
>map>control.lisp
CONTROL-MEASURE-MENU-ITEMS
>map>control.lisp
Description: Objectives, Firing Positions, Assembly Areas

2.4.2.3.32 BATTLE-POSITION

Definition 32

>map>control.lisp
Type: Function
Arguments: (WINDOW &OPTIONAL (UNIT (CDAR *UNIT-TYPES*)) (OWN-
WINDOW NIL))
Outputs:
Calls: ROTATABLERECTANGLE
>map>control.lisp
Called by: (METHOD ENTER-NEW-CONTROL-MEASURE BATTLE-POSITION)
>map>control.lisp
BATTLE-POSITION
>map>control.lisp
CONTROL-MEASURE-MENU-ITEMS
>map>control.lisp
Description: Battle Position

2.4.2.3.33 LINE-CONTROL-MEASURE

Definition 33

>map>control.lisp

Type: Function

Arguments: (WINDOW &OPTIONAL NAME (TYPE (CDAR *LINE-TYPES*)) (OWN-WINDOW NIL))

Outputs:

Calls: RUBBER-LINE

>map>control.lisp

Called by: ARROW-CONTROL-MEASURE

>map>control.lisp

UNIT-BOUNDARY

>map>control.lisp

(METHOD ENTER-NEW-CONTROL-MEASURE LINE-CONTROL-MEASURE)

>map>control.lisp

LINE-CONTROL-MEASURE

>map>control.lisp

CONTROL-MEASURE-MENU-ITEMS

>map>control.lisp

Description: Phase Line, Objective, EFLOT, Line of Contact, Line of Departure

2.4.2.3.34 UNIT-BOUNDARY

Definition 34

>map>control.lisp

Type: Function

Arguments: (WINDOW &OPTIONAL (UNIT (CDAR *UNIT-TYPES*)) (OWN-WINDOW NIL))

Outputs:

Calls: RUBBER-LINE

>map>control.lisp

Called by: (METHOD ENTER-NEW-CONTROL-MEASURE UNIT-BOUNDARY)

>map>control.lisp

UNIT-BOUNDARY

>map>control.lisp

CONTROL-MEASURE-MENU-ITEMS

>map>control.lisp

Description: Unit Boundaries

2.4.2.3.35 ARROW-CONTROL-MEASURE

Definition 35

>map>control.lisp

Type: Function

Arguments: (WINDOW &OPTIONAL NAME-DEFAULT TYPE-DEFAULT DRAW-TYPE-DEFAULT (OWN-WINDOW NIL))

Outputs:

Calls: RUBBER-LINE

>map>control.lisp

Called by: (METHOD ENTER-NEW-CONTROL-MEASURE ARROW-CONTROL-MEASURE)

>map>control.lisp
ARROW-CONTROL-MEASURE
>map>control.lisp
CONTROL-MEASURE-MENU-ITEMS
>map>control.lisp

Description: Avenue of Approach, Axis of Advance

2.4.2.3.36 'WITH-COLOR-.MOUSE

Definition 36

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.37 WITH-COLOR-.MOUSE

Definition 37

>map>control.lisp
Type: Macro
Arguments: (WINDOW WINDOW-X WINDOW-Y MOUSE-STRING CHARACTER
OLD-MOUSE-FORM NEW-MOUSE-FORM LEFT-FORM
MIDDLE-FORM RIGHT-FORM EXIT-FORM)
Outputs:
Calls: WITH-COLOR-.MOUSE
>map>control.lisp
Called by: SINGLE-POINT
>map>control.lisp
SELECT-POLYGON
>map>control.lisp
RUBBER-LINE
>map>control.lisp
ROTATABLE-RECTANGLE
>map>control.lisp
WITH-COLOR-.MOUSE
>map>control.lisp
Description: None

2.4.2.3.38 ROTATABLE-RECTANGLE

Definition 38

>map>control.lisp
Type: Function
Arguments: (WINDOW &OPTIONAL (DIRECTION NIL))
Outputs:

Calls: PIE
>map>utilities.lisp
SAFE-ATAN
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
WITH-COLOR-MOUSE
>map>control.lisp
DRAW-ROT-RECT
>map>control.lisp
Called by: BATTLE-POSITION
>map>control.lisp
AREA-CONTROL-MEASURE
>map>control.lisp
Description: None

2.4.2.3.39 DRAW-ROT-RECT

Definition 39

>map>control.lisp
Type: Function
Arguments: (WIDTH HEIGHT CENTER-X CENTER-Y ROTATION WINDOW ALU
DIRECTION ARROW-HEAD-LENGTH
ARROW-BASE-WIDTH)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-GRAFICS
>map>utilities.lisp
WITH-FAST-MAP-GRAFICS
>map>utilities.lisp
Called by: ROTATABLE-RECTANGLE
>map>control.lisp
Description: None

2.4.2.3.40 'RUBBER-LINE

Definition 40

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.41 RUBBER-LINE

Definition 41

>map>control.lisp

Type: Function

Arguments: (WINDOW &OPTIONAL (LIMIT NIL))

Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE

>map>utilities.lisp

WITH-MAP-Graphics

>map>utilities.lisp

WITH-FAST-MAP-Graphics

>map>utilities.lisp

OVERLAY-ALU

>map>color-map.lisp

ERASE-OVERLAY-ALU

>map>color-map.lisp

WITH-COLOR-.MOUSE

>map>control.lisp

Called by: ARROW-CONTROL-MEASURE

>map>control.lisp

UNIT-BOUNDARY

>map>control.lisp

LINE-CONTROL-MEASURE

>map>control.lisp

MAKE-ZONE

>saf>cm>zone.lisp

MAKE-AREA

>saf>cm>area.lisp

MAKE-LINE

>saf>cm>line.lisp

MAKE-ROUTE

>saf>cm>route.lisp

(METHOD INTERVENE SIMNET-AGENT ATTACK)

>saf>objects>intervention.lisp

Description: None

2.4.2.3.42 'SELECT-POLYGON

Definition 42

>map>control.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.3.43 SELECT-POLYGON

Definition 43

>map>control.lisp
Type: Function
Arguments: (WINDOW)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
OVERLAY-ALU
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
WITH-COLOR-.MOUSE
>map>control.lisp
Called by: None
Description: None

2.4.2.3.44 'SINGLE-POINT

Definition 44

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.45 SINGLE-POINT

Definition 45

>map>control.lisp
Type: Function
Arguments: (WINDOW)
Outputs:
Calls: WITH-COLOR-.MOUSE
>map>control.lisp
Called by: (METHOD MOVE-CONTROL-MEASURE ZONE)
>saf>cm>zone.lisp
(METHOD MOVE-CONTROL-MEASURE AREA)
>saf>cm>area.lisp
(METHOD INSERT-POINT-AFTER GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD MOVE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD MOVE-CONTROL-MEASURE LINE)
>saf>cm>line.lisp

(METHOD INSERT-POINT-BEFORE LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-AFTER LINE)
>saf>cm>line.lisp
(METHOD MOVE-POINT LJNE)
>saf>cm>line.lisp
MAKE-POINT
>saf>cm>point.lisp
(METHOD MOVE-POINT CM-POINT)
>saf>cm>point.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp
MOUSE-ON-BRIDGE-APPROACH-POINT
>saf>cm>road-routes.lisp
(METHOD INTERVENE SIMNET-AGENT LAND)
>saf>objects>intervention.lisp
(METHOD INTERVENE SIMNET-AGENT GO-TO-LOCATION)
>saf>objects>intervention.lisp
(METHOD INTERVENE SIMNET-AGENT FOLLOW-VEHICLE)
>saf>objects>intervention.lisp
FACE-DIRECTION
>saf>objects>simnet-agent.lisp
(METHOD SPECIFY-RULES-OF-ENGAGEMENT GUNNER)
>saf>objects>gunner.lisp
BOMB-BUTTON
>saf>network>commands.lisp

Description: None

2.4.2.3.46 'DRAW-UNIT-SYMBOL

Definition 46

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.47 DRAW-UNIT-SYMBOL

Definition 47

>map>control.lisp
Type: Function
Arguments: (POINT UNIT-TYPE ROTATION WINDOW ALU)
Outputs:

Calls: PIE
>map>utilities.lisp
WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp

Called by: (METHOD DRAW UNIT-BOUNDARY AFTER)

>map>control.lisp
(METHOD DRAW BATTLE-POSITION AFTER)
>map>control.lisp

Description: None

2.4.2.3.48 DRAW-1-SCALLOPED-LINE

Definition 48

>map>control.lisp
Type: Function
Arguments: (POINTS WINDOW ALU)
Outputs:
Calls: PIE
>map>utilities.lisp
WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
DISTANCE
>map>utilities.lisp
SAFE-ATAN
>map>utilities.lisp
VEC-NORMALIZE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp

Called by: (METHOD DRAW LINE-CONTROL-MEASURE)
>map>control.lisp
Description: None

2.4.2.3.49 DRAW-2-SCALLOPED-LINES

Definition 49

>map>control.lisp
Type: Function
Arguments: (POINTS WINDOW ALU)
Outputs:
Calls: PIE
 >map>utilities.lisp
 WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-GRAFICS
 >map>utilities.lisp
 WITH-FAST-MAP-GRAFICS
 >map>utilities.lisp
 DISTANCE
 >map>utilities.lisp
 SAFE-ATAN
 >map>utilities.lisp
 VEC-NORMALIZE
 >map>vectors.lisp
 VEC-ROTATE
 >map>vectors.lisp
 VEC-ADD
 >map>vectors.lisp
 VEC-SUB
 >map>vectors.lisp
 VEC-SCALE
 >map>vectors.lisp
Called by: (METHOD DRAW LINE-CONTROL-MEASURE)
>map>control.lisp
Description: None

2.4.2.3.50 FIND-CENTER-POINT

Definition 50

>map>control.lisp
Type: Function
Arguments: (POINTS)
Outputs:
Calls: DISTANCE
 >map>utilities.lisp
 SAFE-ATAN
 >map>utilities.lisp
 VEC-SUB
 >map>vectors.lisp
 VEC-SCALE
 >map>vectors.lisp

Called by: (METHOD DRAW ARROW-CONTROL-MEASURE)
>map>control.lisp
(METHOD DRAW UNIT-BOUNDARY AFTER)
>map>control.lisp
Description: None

2.4.2.3.51 DRAW-ARROW

Definition 51

>map>control.lisp
Type: Function
Arguments: (POINTS WINDOW ALU DASHED CROSSED)
Outputs:
Calls: PIE
>map>utilities.lisp
WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
VEC-ROTATE
>map>vectors.lisp
VEC-ADD
>map>vectors.lisp
VEC-SUB
>map>vectors.lisp
VEC-SCALE
>map>vectors.lisp
Called by: (METHOD DRAW ARROW-CONTROL-MEASURE)
>map>control.lisp
Description: None

2.4.2.3.52 'CONTROL-MEASURES-MENU

Definition 52

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.53 CONTROL-MEASURES-MENU

Definition 53

>map>control.lisp
Type: Function
Arguments: (WINDOW)
Outputs:

Calls: *CONTROL-MEASURE-MENU-ITEMS*
>map>control.lisp
Called by: None
Description: None

2.4.2.3.54 'EDIT-CONTROL-MEASURES

Definition 54

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.55 EDIT-CONTROL-MEASURES

Definition 55

>map>control.lisp
Type: Function
Arguments: (WINDOW)
Outputs:
Calls: CONTROL-MEASURE
 >map>control.lisp
Called by: *CONTROL-MEASURE-MENU-ITEMS*
 >map>control.lisp
Description: None

2.4.2.3.56 'DRAW-ALL-CONTROL-MEASURES

Definition 56

>map>control.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.3.57 DRAW-ALL-CONTROL-MEASURES

Definition 57

>map>control.lisp
Type: Function
Arguments: (WINDOW)
Outputs:

Calls: *CONTROL-MEASURES*
>map>control.lisp
CONTROL-MEASURE
>map>control.lisp
Called by: (METHOD EDIT CONTROL-MEASURE)
>map>control.lisp
DRAW-MAP
>map>draw-terrain.lisp
Description: None

2.4.2.4 CSU map>draw-wide-curve.lisp

This unit contains two routines that draw lines with more than single pixel widths. The first routine draws lines with a single width. The second routine takes a list of three widths, and tapers each end of the wide line based on the first and third widths.

The method :map-draw-wide-curve, for the graphics-mixin object, is a slightly modified copy of the code for the Symbolics function draw-wide-curve, in the tv package. The key step in this method is finding the intersection points of lines parallel to the given segments, at offsets of half the desired width on either side. This is done by the macro compute-points, defined by a macrolet statement inside the method. This macro computes the intersection points by solving two linear equations in two unknowns. In the special case where the two segments have nearly identical slopes, the determinant of the linear system is near zero, making the results inaccurate. In this case, the intersection point is found simply by taking an offset from the point where the two given segments meet.

2.4.2.4.1 (METHOD MAP-DRAW-WIDE-CURVE GRAPHICS-MIXIN) Definition 1

>map>draw-wide-curve.lisp
Type: Method
Arguments: (PX PY CURVE-WIDTH &OPTIONAL END (ALU DRAW))
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.4.2 (METHOD MAP-DRAW-TAPERED-WIDE-CURVE GRAPHICS-MIXIN)

Definition 2

>map>draw-wide-curve.lisp
Type: Method
Arguments: (PX PY CURVE-WIDTH-LIST &OPTIONAL END (ALU DRAW))
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.5 CSU map>grids.lisp

This unit contains the routines that draw the UTM grids on the color map display. The UTM location of the lower left and upper right corners of the terrain database are stored in the terrain quadtree, and these routines use these values to determine the UTM grids to draw for the current zoom level and map pan. The UTM (Universal Transverse Mercator) coordinate system is documented in the Defense Mapping Agency document DMA TM 8358.1, entitled "Datums, Ellipsoids, Grids, and Grid Reference Systems".

2.4.2.5.1 (METHOD GRID-INC UTM-GRID-MIXIN)

Definition 1

>map>grids.lisp

Type: Method

Arguments: (&OPTIONAL (GRID-LINES-ON-SCREEN 2))

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.5.2 (METHOD LEFT-X-GRID UTM-GRID-MIXIN)

Definition 2

>map>grids.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.5.3 (METHOD RIGHT-X-GRID UTM-GRID-MIXIN)

Definition 3

>map>grids.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.5.4 (METHOD SW-GRID-WORLDS UTM-GRID-MIXIN)

Definition 4

>map>grids.lisp

Type: Method

Arguments: (LEFT BOTTOM GRID-INC)

Outputs:

Calls: None
Called by: None
Description: None

2.4.2.5.5 'DRAW-GRIDS

Definition 5

>map>grids.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.5.6 (METHOD DRAW-GRIDS UTM-GRID-MIXIN)

Definition 6

>map>grids.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *QUAD-TREE*
 >map>terrain-vars.lisp
 WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-GRAFICS
 >map>utilities.lisp
 WITH-FAST-MAP-GRAFICS
 >map>utilities.lisp
 OVERLAY-ALU
 >map>color-map.lisp
 SOIL-ALU
 >map>color-map.lisp
Called by: None
Description: None

2.4.2.6 CSU map>intersection.lisp

This unit contains routines for determining line segment, point and polygon intersections. These include functions for counting and listing intersection points of lines and polygons, determining if a point or segment is inside a polygon, finding the bounding rectangle of a list of points, and determining if a point is on a given line or line segment.

2.4.2.6.1 COUNT-INTERSECTIONS

Definition 1

>map>intersection.lisp
Type: Function
Arguments: (POLYGON X1 Y1 X2 Y2)

Outputs:

Calls: None

Called by: POINT-INSIDE-POLYGON-P

>map>intersection.lisp

Description: None

2.4.2.6.2 'POINT-INSIDE-POLYGON-P

Definition 2

>map>intersection.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.6.3 POINT-INSIDE-POLYGON-P

Definition 3

>map>intersection.lisp

Type: Function

Arguments: (POLYGON X Y)

Outputs:

Calls: COUNT-INTERSECTIONS

>map>intersection.lisp

Called by: SEGMENT-INSIDE-POLYGON-P

>map>intersection.lisp

Description: None

2.4.2.6.4 'SEGMENT-INSIDE-POLYGON-P

Definition 4

>map>intersection.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.6.5 SEGMENT-INSIDE-POLYGON-P

Definition 5

>map>intersection.lisp

Type: Function

Arguments: (POLYGON X1 Y1 X2 Y2)

Outputs:

Calls: POINT-INSIDE-POLYGON-P

>map>intersection.lisp

Called by: LAKES-THRU
>saf>cm>water-check.lisp
CHECK-LAKE-INTERSECTIONS
>saf>cm>water-check.lisp
Description: None

2.4.2.6.6 'SEGMENT-INTERSECTS-POLYGON-P

Definition 6

>map>intersection.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.6.7 SEGMENT-INTERSECTS-POLYGON-P

Definition 7

>map>intersection.lisp
Type: Function
Arguments: (POLYGON X1 Y1 X2 Y2)
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.6.8 BOUNDING-RECTANGLE

Definition 8

>map>intersection.lisp
Type: Function
Arguments: (POINTS)
Outputs:
Calls: None
Called by: POSSIBLE-INTERSECTION
>map>intersection.lisp
Description: None

2.4.2.6.9 'POSSIBLE-INTERSECTION

Definition 9

>map>intersection.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.6.10 POSSIBLE-INTERSECTION

Definition 10

>map>intersection.lisp
Type: Function
Arguments: (POINTS X1 Y1 X2 Y2)
Outputs:
Calls: CLIP
 >map>clip.lisp
 BOUNDING-RECTANGLE
 >map>intersection.lisp
Called by: LAKES-THRU
 >saf>cm>water-check.lisp
 WATER-SEGMENTS-THRU
 >saf>cm>water-check.lisp
 SEGMENT-THRU-RIVER
 >saf>cm>water-check.lisp
Description: None

2.4.2.6.11 'POINT-SEGMENT-INTERSECTION

Definition 11

>map>intersection.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.6.12 POINT-SEGMENT-INTERSECTION

Definition 12

>map>intersection.lisp
Type: Function
Arguments: (POINTS P1 P2)
Outputs:
Calls: DISTANCE
 >map>utilities.lisp
 POINT-LINE-INTERSECTION
 >map>intersection.lisp
Called by: None
Description: None

2.4.2.6.13 'POINT-LINE-INTERSECTION

Definition 13

>map>intersection.lisp
Type: EXPORT
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.4.2.6.14 POINT-LINE-INTERSECTION

Definition 14

>map>intersection.lisp
Type: Function
Arguments: (X1 Y1 X2 Y2 P1 P2)
Outputs:
Calls: PIE
 >map>utilities.lisp
 VEC-NORMALIZE
 >map>vectors.lisp
 VEC-ROTATE
 >map>vectors.lisp
 VEC-ADD
 >map>vectors.lisp
 VEC-SUB
 >map>vectors.lisp
Called by: POINT-SEGMENT-INTERSECTION
 >map>intersection.lisp
 CALCULATE-POINT-LINE-INTERSECTION
 >saf>cm>road-routes.lisp
Description: None

2.4.2.7 CSU map>legend.lisp

This unit contains the routines for drawing the legend information on the map display. A separate window type is defined for the legend. Functions in this CSU define the legend-window flavor, and methods for drawing boxes and lines, the legend scale-line, legend buildings, a legend bridge, and a legend contour-line.

2.4.2.7.1 'LEGEND-WINDOW

Definition 1

>map>legend.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.7.2 LEGEND-WINDOW

Definition 2

>map>legend.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.7.3 (METHOD INIT LEGEND-WINDOW AFTER)

Definition 3

>map>legend.lisp
Type: Method
Arguments: (IGNORE)
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.7.4 (METHOD ERASE LEGEND-WINDOW)

Definition 4

>map>legend.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.7.5 (METHOD SET-LEGEND-POSITIONS LEGEND-WINDOW)

Definition 5

>map>legend.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.7.6 'DRAW-LEGEND

Definition 6

>map>legend.lisp
Type: EXPORT
Arguments: ()

Outputs:
Calls: None
Called by: None
Description: None

2.4.2.7.7 (METHOD DRAW-LEGEND LEGEND-WINDOW)

Definition 7

>map>legend.lisp
Type: Method
Arguments: (&OPTIONAL (CONTOURS NIL))
Outputs:
Calls: *QUAD-TREE*
 >map>terrain-vars.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
 SCALE-STRING
 >map>zoom-levels.lisp
 MAJOR-COUTOUR-LINE-INTERVAL
 >map>zoom-levels.lisp
 MINOR-COUTOUR-LINE-INTERVAL
 >map>zoom-levels.lisp
 LEGEND-SIZE
 >map>zoom-levels.lisp
 LEGEND-LENGTH
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
 TREE-ALU
 >map>color-map.lisp
 SOIL-ROAD-ALU
 >map>color-map.lisp
 SOIL-WATER-ALU
 >map>color-map.lisp
 SOIL-MUCK-ALU
 >map>color-map.lisp
 LOW-COUTOUR-ALU
 >map>color-map.lisp
 HIGH-COUTOUR-ALU
 >map>color-map.lisp
 LEGEND-TEXT-ALU
 >map>color-map.lisp
 DRAW-LEGEND-BOX-AND-LINE
 >map>legend.lisp
 DRAW-LEGEND-SCALE-LINE
 >map>legend.lisp
 DRAW-LEGEND-BUILDINGS
 >map>legend.lisp
 DRAW-LEGEND-BRIDGE
 >map>legend.lisp
 DRAW-LEGEND-COUTOUR-LINE
 >map>legend.lisp

Called by: None
Description: None

2.4.2.7.8 DRAW-LEGEND-BOX-AND-LINE

Definition 8

>map>legend.lisp
Type: Function
Arguments: (STRING X1 Y X2 STREAM LINE-ALU)
Outputs:
Calls: *LEGEND-TEXT-ALU*
 >map>color-map.lisp
Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
Description: None

2.4.2.7.9 DRAW-LEGEND-SCALE-LINE

Definition 9

>map>legend.lisp
Type: Function
Arguments: (LENGTH X Y STREAM ALU)
Outputs:
Calls: None
Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
Description: None

2.4.2.7.10 DRAW-LEGEND-BUILDINGS

Definition 10

>map>legend.lisp
Type: Function
Arguments: (X Y STREAM)
Outputs:
Calls: *OBJECT-ALU*
 >map>color-map.lisp
Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
Description: None

2.4.2.7.11 DRAW-LEGEND-BRIDGE

Definition 11

>map>legend.lisp
Type: Function
Arguments: (X Y STREAM ALU)
Outputs:
Calls: None

Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)

>map>legend.lisp

Description: None

2.4.2.7.12 DRAW-LEGEND-CONTOUR-LINE

Definition 12

>map>legend.lisp

Type: Function

Arguments: (X Y STREAM ALU)

Outputs:

Calls: None

Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)

>map>legend.lisp

Description: None

2.4.2.8 CSU map>quadtree-search.lisp

This unit contains the routines that perform the searches in the terrain database quadtree structure. Given an area of interest, the feature indices of the quadtree nodes that are partially or totally within that area are found. The overall quadtree approach is described in the BBN technical report *Terrain Reasoning in the Simnet Semi-Automated Forces System*.

2.4.2.8.1 'QUADS-TO-DRAW

Definition 1

>map>quadtree-search.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.8.2 QUADS-TO-DRAW

Definition 2

>map>quadtree-search.lisp

Type: Function

Arguments: (QUAD-TREE STREAM)

Outputs:

Calls: GET-QUAD-NODES

>map>quadtree-search.lisp

Called by: DRAW-MAP

>map>draw-terrain.lisp

DRAW-MAP

>saf>sys>update-process.lisp

Description: None

2.4.2.8.3 'GET-QUAD-NODES

Definition 3

>map>quadtree-search.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.8.4 GET-QUAD-NODES

Definition 4

>map>quadtree-search.lisp
Type: Function
Arguments: (QUAD-NODES X Y SQUARE-SIZE X-MIN Y-MIN X-MAX Y-MAX)
Outputs:
Calls: GET-QUAD-NODES
>map>quadtree-search.lisp
GET-THIS-NODE
>map>quadtree-search.lisp
Called by: HEIGHT-AT-POINT
>map>draw-terrain.lisp
GET-QUAD-NODES
>map>quadtree-search.lisp
QUADS-TO-DRAW
>map>quadtree-search.lisp
GET-QUADS-PASSED-THRU
>saf>cm>water-check.lisp
GET-NEIGHBOR-QUAD-ROADS
>saf>cm>road-routes.lisp
Description: None

2.4.2.8.5 GET-THIS-NODE

Definition 5

>map>quadtree-search.lisp
Type: Function
Arguments: (QUAD-NODE X Y SQUARE-SIZE X-MIN Y-MIN X-MAX Y-MAX)
Outputs:
Calls: CLIP
>map>clip.lisp
Called by: GET-QUAD-NODES
>map>quadtree-search.lisp
Description: None

2.4.2.9 CSU map>scalable-window.lisp

This unit defines the map display window, and contains routines that manipulate that window, such as pan and zoom. It also contains routines that convert from terrain database world coordinates to color screen (pixel) coordinates. Notice the whopper :draw-triangle, which is needed to correct a limitation of the Symbolics draw-triangle function. The whopper checks to see if any two points of the triangle are equal, and, if so, draws the appropriate line segment, a "degenerate" triangle.

2.4.2.9.1 'SCALABLE-WINDOW

Definition 1

>map>scalable-window.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.2 SCALABLE-WINDOW

Definition 2

>map>scalable-window.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.3 (METHOD INIT SCALABLE-WINDOW AFTER)

Definition 3

>map>scalable-window.lisp
Type: Method
Arguments: (&REST IGNORE)
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.4 (METHOD UPDATE SCALABLE-WINDOW)

Definition 4

>map>scalable-window.lisp
Type: Method
Arguments: ()
Outputs:

Calls: *QUAD-TREE*
>map>terrain-vars.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
MAKE-COLOR-ALUS
>map>color-map.lisp

Called by: None
Description: None

2.4.2.9.5 (METHOD CLEAR-COORDS SCALABLE-WINDOW) Definition 5

>map>scalable-window.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.6 (METHOD NEW-SCALE-INTERNAL SCALABLE-WINDOW) Definition 6

>map>scalable-window.lisp
Type: Method
Arguments: (XTRANS YTRANS &OPTIONAL (SCALE 1))
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.7 (METHOD NEW-SCALE SCALABLE-WINDOW) Definition 7

>map>scalable-window.lisp
Type: Method
Arguments: (XTRANS YTRANS &OPTIONAL (SCALE 1))
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.8 (METHOD NEW-SCALE SCALABLE-WINDOW BEFORE)

Definition 8

>map>scalable-window.lisp

Type: Method

Arguments: (XTRANS YTRANS &OPTIONAL (SCALE 1))

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.9 (METHOD NEW-SCALE SCALABLE-WINDOW AFTER)

Definition 9

>map>scalable-window.lisp

Type: Method

Arguments: (XTRANS YTRANS &OPTIONAL (SCALE 1))

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.10 (METHOD DRAW-REGION SCALABLE-WINDOW)

Definition 10

>map>scalable-window.lisp

Type: Method

Arguments: ()

Outputs:

Calls: *QUAD-TREE*

>map>terrain-vars.lisp

WITH-INTEGER-CONVERSION-MODE

>map>utilities.lisp

WITH-MAP-Graphics

>map>utilities.lisp

WITH-FAST-MAP-Graphics

>map>utilities.lisp

Called by: None

Description: None

2.4.2.9.11 'WINDOW-SCALE

Definition 11

>map>scalable-window.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.12 (METHOD WINDOW-SCALE SCALABLE-WINDOW)

Definition 12

>map>scalable-window.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.13 (METHOD SOUTH-WEST-CORNER SCALABLE-WINDOW)

Definition 13

>map>scalable-window.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.14 (METHOD SCALED-HEIGHT SCALABLE-WINDOW)

Definition 14

>map>scalable-window.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.15 (METHOD SCALED-WIDTH SCALABLE-WINDOW)

Definition 15

>map>scalable-window.lisp

Type: Method

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.16 'WORLD-EDGES

Definition 16

>map>scalable-window.lisp

Type: EXPORT

Arguments: ()

Outputs:**Calls:** None**Called by:** None**Description:** None**2.4.2.9.17 (METHOD WORLD-EDGES SCALABLE-WINDOW)****Definition 17**

>map>scalable-window.lisp

Type: Method**Arguments:** ()**Outputs:****Calls:** None**Called by:** None**Description:** None**2.4.2.9.18 'CURRENT-CENTER****Definition 18**

>map>scalable-window.lisp

Type: EXPORT**Arguments:** ()**Outputs:****Calls:** None**Called by:** None**Description:** None**2.4.2.9.19 (METHOD CURRENT-CENTER SCALABLE-WINDOW)****Definition 19**

>map>scalable-window.lisp

Type: Method**Arguments:** ()**Outputs:****Calls:** None**Called by:** None**Description:** None**2.4.2.9.20 'PAN-TO-NEW-POINT****Definition 20**

>map>scalable-window.lisp

Type: EXPORT**Arguments:** ()**Outputs:****Calls:** None**Called by:** None**Description:** None

2.4.2.9.21 (METHOD PAN-TO-NEW-POINT SCALABLE-WINDOW)

Definition 21

>map>scalable-window.lisp
Type: Method
Arguments: (X Y &OPTIONAL (NEW-SCALE NIL))
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.22 'RESCALE

Definition 22

>map>scalable-window.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.23 (METHOD RESCALE SCALABLE-WINDOW)

Definition 23

>map>scalable-window.lisp
Type: Method
Arguments: (NEW-SCALE &OPTIONAL LEGEND-WINDOW)
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.24 'RESCALE-FROM-MENU

Definition 24

>map>scalable-window.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.25 (METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)

Definition 25

>map>scalable-window.lisp
Type: Method
Arguments: (&OPTIONAL LEGEND-WINDOW)

Outputs:

Calls: *ZOOM-LEVELS*
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
SCALE-STRING
>map>zoom-levels.lisp
CURRENT-SCALE
>map>zoom-levels.lisp
CURRENT-ANCHOR-X
>map>zoom-levels.lisp
CURRENT-ANCHOR-Y
>map>zoom-levels.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp

Called by: None

Description: None

2.4.2.9.26 'ZOOM-TO

Definition 26

>map>scalable-window.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.27 (METHOD ZOOM-TO SCALABLE-WINDOW)

Definition 27

>map>scalable-window.lisp

Type: Method

Arguments: (ZOOM-LEVEL &OPTIONAL LEGEND-WINDOW)

Outputs:

Calls: *CURRENT-ZOOM-LEVEL*
>map>zoom-levels.lisp
CURRENT-SCALE
>map>zoom-levels.lisp
CURRENT-ANCHOR-X
>map>zoom-levels.lisp
CURRENT-ANCHOR-Y
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp

Called by: None

Description: None

2.4.2.9.28 'ZOOM-IN

Definition 28

>map>scalable-window.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.29 (METHOD ZOOM-IN SCALABLE-WINDOW)

Definition 29

>map>scalable-window.lisp
Type: Method
Arguments: (X Y &OPTIONAL LEGEND-WINDOW)
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-SCALE
 >map>zoom-levels.lisp
 CURRENT-ANCHOR-X
 >map>zoom-levels.lisp
 CURRENT-ANCHOR-Y
 >map>zoom-levels.lisp
 NEXT-ZOOM-IN
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: None
Description: None

2.4.2.9.30 'ZOOM-OUT

Definition 30

>map>scalable-window.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.31 (METHOD ZOOM-OUT SCALABLE-WINDOW)

Definition 31

>map>scalable-window.lisp
Type: Method
Arguments: (X Y &OPTIONAL LEGEND-WINDOW)
Outputs:

Calls: *CURRENT-ZOOM-LEVEL*
>map>zoom-levels.lisp
CURRENT-SCALE
>map>zoom-levels.lisp
CURRENT-ANCHOR-X
>map>zoom-levels.lisp
CURRENT-ANCHOR-Y
>map>zoom-levels.lisp
NEXT-ZOOM-OUT
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp

Called by: None

Description: None

2.4.2.9.32 'ZOOM-IN-AROUND-CENTER

Definition 32

>map>scalable-window.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.9.33 (METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW)

Definition 33

>map>scalable-window.lisp

Type: Method

Arguments: (&OPTIONAL LEGEND-WINDOW)

Outputs:

Calls: *CURRENT-ZOOM-LEVEL*

>map>zoom-levels.lisp

CURRENT-SCALE

>map>zoom-levels.lisp

CURRENT-ANCHOR-X

>map>zoom-levels.lisp

CURRENT-ANCHOR-Y

>map>zoom-levels.lisp

NEXT-ZOOM-IN

>map>zoom-levels.lisp

CURRENT-ZOOM-LEVEL

>map>zoom-levels.lisp

Called by: None

Description: None

2.4.2.9.34 'ZOOM-OUT-AROUND-CENTER
Definition 34

>map>scalable-window.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.35 (METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW)

Definition 35

>map>scalable-window.lisp
Type: Method
Arguments: (&OPTIONAL LEGEND-WINDOW)
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-SCALE
 >map>zoom-levels.lisp
 CURRENT-ANCHOR-X
 >map>zoom-levels.lisp
 CURRENT-ANCHOR-Y
 >map>zoom-levels.lisp
 NEXT-ZOOM-OUT
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp

Called by: None
Description: None

2.4.2.9.36 'ON-TERRAIN-P

Definition 36

>map>scalable-window.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.9.37 (METHOD ON-TERRAIN-P SCALABLE-WINDOW)
Definition 37

>map>scalable-window.lisp
Type: Method
Arguments: (X Y)

Outputs:

Calls: *QUAD-TREE*
>map>terrain-vars.lisp
Called by: None
Description: None

2.4.2.9.38 'ON-SCREEN-P

Definition 38

>map>scalable-window.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None
Called by: None
Description: None

2.4.2.9.39 (METHOD ON-SCREEN-P SCALABLE-WINDOW)

Definition 39

>map>scalable-window.lisp

Type: Method

Arguments: (X Y)

Outputs:

Calls: None
Called by: None
Description: None

2.4.2.9.40 (DRAW-TRIANGLE SCALABLE-WINDOW)

Definition 40

>map>scalable-window.lisp

Type: DEFWHOPPER

Arguments: ()

Outputs:

Calls: None
Called by: None
Description: None

2.4.2.9.41 (METHOD MOUSE-TO-WORLD SCALABLE-WINDOW)

Definition 41

>map>scalable-window.lisp

Type: Method

Arguments: (MOUSE-X MOUSE-Y)

Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
SCREEN-TO-WORLD
>map>utilities.lisp

Called by: None

Description: None

2.4.2.9.42 (METHOD WORLD-TO-.MOUSE SCALABLE-WINDOW)

Definition 42

>map>scalable-window.lisp
Type: Method
Arguments: (WORLD-X WORLD-Y)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WORLD-TO-SCREEN
>map>utilities.lisp
Called by: None
Description: None

2.4.2.10 CSU map>terrain-vars.lisp

This unit contains all of the definitions of the terrain database structures, as well as global variables that hold these structures for a loaded terrain database. The quadtree structure is the top level terrain structure, which points to the quadtree node structures. These nodes point to feature structures. The indices in the feature structures point to individual terrain features in the various feature arrays.

2.4.2.10.1 '(*ROAD-SEGMENT-ARRAY* *ROAD-INTERSECTION- ARRAY* *RAIL-SEGMENT-ARRAY* *BRIDGE-ARRAY*

Definition 1

TREES-ARRAY *CONTOUR-ARRAY* *OBJECT-ARRAY* *CANOPY-ARRAY*
CANOPY-TRIANGLES
WATER-SEGMENT-ARRAY *WATER-INTERSECTION-ARRAY* *WATER-
AREA-ARRAY* *WATER-AREA-TRIANGLES*)
>map>terrain-vars.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.10.2 *ROAD-SEGMENT-ARRAY*

Definition 2

>map>terrain-vars.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: DRAW-ALL-ROADS

>map>draw-terrain.lisp

DRAW-ROADS

>map>draw-terrain.lisp

FIND-NEAREST-BRIDGE

>saf>cm>road-routes.lisp

GET-BRIDGE-POINTS

>saf>cm>road-routes.lisp

DRAW-EXPANDED-ROUTE-CORE

>saf>cm>road-routes.lisp

ROAD-SEGMENTS-FROM-INTERSECTIONS

>saf>cm>road-routes.lisp

FIND-ROAD-DIRECTION

>saf>cm>road-routes.lisp

CALCULATE-ROUTE-DISTANCE

>saf>cm>road-routes.lisp

ROUTE-INTERSECTION

>saf>cm>road-routes.lisp

FIND-NEAREST-ROAD-SEGMENT

>saf>cm>road-routes.lisp

EXPAND-ROUTE-INTO-POINTS

>saf>cm>route-finder.lisp

EXPAND-FIRST-ROUTE

>saf>cm>route-finder.lisp

Description: None

2.4.2.10.3 *ROAD-INTERSECTION-ARRAY*

Definition 3

>map>terrain-vars.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: GET-BRIDGE-POINTS

>saf>cm>road-routes.lisp

ROAD-SEGMENTS-FROM-INTERSECTIONS

>saf>cm>road-routes.lisp

CALCULATE-ROUTE-DISTANCE

>saf>cm>road-routes.lisp

FIND-ROAD-INTERSECTIONS

>saf>cm>road-routes.lisp

FIND-NEAREST-INTERSECTION

>saf>cm>road-routes.lisp

GET-ROAD-POINT

>saf>cm>road-routes.lisp
EXPAND-ROUTE-INTO-POINTS
>saf>cm>route-finder.lisp
DISTANCE-BETWEEN-INTERSECTIONS
>saf>cm>route-finder.lisp
EXPAND-FIRST-ROUTE
>saf>cm>route-finder.lisp
FIND-ROUTE
>saf>cm>route-finder.lisp

Description: None

2.4.2.10.4 *TREES-ARRAY*

Definition 4

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-TREES
 >map>draw-terrain.lisp
Description: None

2.4.2.10.5 *CONTOUR-ARRAY*

Definition 5

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: HEIGHT-AT-POINT
 >map>draw-terrain.lisp
 DRAW-ALL-CONTOURS
 >map>draw-terrain.lisp
 DRAW-CONTOURS
 >map>draw-terrain.lisp
Description: None

2.4.2.10.6 *OBJECT-ARRAY*

Definition 6

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-OBJECTS
 >map>draw-terrain.lisp
Description: None

2.4.2.10.7 *CANOPY-ARRAY*

Definition 7

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.8 *CANOPY-TRIANGLES*

Definition 8

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-CANOPIES
 >map>draw-terrain.lisp
 DRAW-CANOPY-TRIANGLES
 >map>draw-terrain.lisp
Description: None

2.4.2.10.9 *WATER-SEGMENT-ARRAY*

Definition 9

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-RIVERS
 >map>draw-terrain.lisp
 DRAW-WATER
 >map>draw-terrain.lisp
 FIND-RIVER-BEND-POINTS
 >saf>cm>water-avoidance.lisp
 SKIRT-RIVER-BEND
 >saf>cm>water-avoidance.lisp
 CROSSING-LOCATION
 >saf>cm>water-avoidance.lisp
 FIND-RIVER-POINTS
 >saf>cm>water-avoidance.lisp
 SKIRT-RIVER
 >saf>cm>water-avoidance.lisp
 FIND-SEGMENT-CROSS-POINTS
 >saf>cm>water-avoidance.lisp
 INTERSECTION-DIRECTION
 >saf>cm>water-avoidance.lisp
 EXTEND-BRIDGE

>saf>cm>water-avoidance.lisp
EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp
FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp
WATER-SEGMENTS-THRU
>saf>cm>water-check.lisp
SEGMENT-THRU-RIVER
>saf>cm>water-check.lisp

Description: None

2.4.2.10.10 *WATER-INTERSECTION-ARRAY*

Definition 10

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: INTERSECTION-DIRECTION
>saf>cm>water-avoidance.lisp
FIND-WATER-INTERSECTIONS
>saf>cm>water-avoidance.lisp
FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp

Description: None

2.4.2.10.11 *BRIDGE-ARRAY*

Definition 11

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-BRIDGES
>map>draw-terrain.lisp
FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp

Description: None

2.4.2.10.12 *RAIL-SEGMENT-ARRAY*

Definition 12

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None

Called by: DRAW-ALL-RAILS
>map>draw-terrain.lisp
DRAW-RAILS
>map>draw-terrain.lisp
Description: None

2.4.2.10.13 *WATER-AREA-ARRAY*
Definition 13

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: SKIRT-LAKE
>saf>cm>water-avoidance.lisp
LAKES-THRU
>saf>cm>water-check.lisp
SEGMENT-THRU-LAKE
>saf>cm>water-check.lisp
Description: None

2.4.2.10.14 *WATER-AREA-TRIANGLES*
Definition 14

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-ALL-WATER-AREAS
>map>draw-terrain.lisp
DRAW-WATER-TRIANGLES
>map>draw-terrain.lisp
LAKES-THRU
>saf>cm>water-check.lisp
SEGMENT-THRU-LAKE
>saf>cm>water-check.lisp
Description: None

2.4.2.10.15 *X-ORIGIN*
Definition 15

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.16 *X-MAXIMUM*

Definition 16

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.17 *Y-ORIGIN*

Definition 17

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.18 *Y-MAXIMUM*

Definition 18

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.19 *COLOR-MAP*

Definition 19

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.20 **QUAD-TREE*

Definition 20

>map>terrain-vars.lisp
Type: EXPORT
Arguments: ()

Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.21 *QUAD-TREE*

Definition 21

>map>terrain-vars.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: HEIGHT-AT-POINT
>map>draw-terrain.lisp
DRAW-MAP
>map>draw-terrain.lisp
(METHOD DRAW-GRIDS UTM-GRID-MIXIN)
>map>grids.lisp
(METHOD UPDATE UTM-GRID-MIXIN AFTER)
>map>utm-grid-mixin.lisp
(METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
(METHOD ON-TERRAIN-P SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD DRAW-REGION SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD UPDATE SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD TOP-LEVEL SAF)
>saf>ui>frame.lisp
(METHOD DISPLAY-FWA-PANE BMI)
>saf>bmi>bmi-frame.lisp
DRAW-MAP
>saf>sys>update-process.lisp
UPDATE-TOP-LEVEL-AUX
>saf>sys>update-process.lisp
MAKE-AIRPORTS
>saf>bmi>airport.lisp
GET-QUADS-IN-REGION
>saf>cm>water-avoidance.lisp
FOLLOW-WATER-SEGMENTS
>saf>cm>water-avoidance.lisp
WATER-THRU
>saf>cm>water-check.lisp
ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
FIND-NEAREST-BRIDGE
>saf>cm>road-routes.lisp

GET-NEIGHBOR-QUAD-ROADS
>saf>cm>road-routes.lisp
FIND-NEAREST-ROAD-SEGMENT
>saf>cm>road-routes.lisp
FIND-NEAREST-INTERSECTION
>saf>cm>road-routes.lisp

Description: None

2.4.2.10.22 '(QUAD-TREE-DB-NAME QUAD-TREE-VERSION
Definition 22

QUAD-TREE-EXTRACTION-DATE
QUAD-TREE-COMMENTS
QUAD-TREE-MAP-SHEETS
QUAD-TREE-NODES
QUAD-TREE-SIZE
QUAD-TREE-RESOLUTION
QUAD-TREE-X
QUAD-TREE-Y
QUAD-TREE-MAX-X
QUAD-TREE-MAX-Y
QUAD-TREE-UTM-SW-CORNER
QUAD-TREE-UTM-NE-CORNER
QUAD-TREE-MIN-Z
QUAD-TREE-MAX-Z
QUAD-TREE-ZOOM-LEVELS
QUAD-TREE-COLOR-MAP)

>map>terrain-vars.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.10.23 QUAD-TREE
Definition 23

>map>terrain-vars.lisp

Type: DEFSTRUCT

Arguments: ()

Outputs:

Calls: None

Called by: QUAD-TREE-P

>map>terrain-vars.lisp

COPY-QUAD-TREE

>map>terrain-vars.lisp

MAKE-QUAD-TREE

>map>terrain-vars.lisp

Description: None

2.4.2.10.24 QUAD-TREE-DEFAULT

Definition 24

>map>terrain-vars.lisp
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: QUAD-TREE-DEFAULT-P
 >map>terrain-vars.lisp
 COPY-QUAD-TREE-DEFAULT
 >map>terrain-vars.lisp
 MAKE-QUAD-TREE-DEFAULT
 >map>terrain-vars.lisp
Description: None

2.4.2.10.25 '(QUAD-FEATURES QUAD-NW-NODE QUAD-NE-NODE QUAD-SE-NODE QUAD-SW-NODE)

Definition 25

>map>terrain-vars.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None.
Description: None

2.4.2.10.26 QUAD-NODE

Definition 26

>map>terrain-vars.lisp
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: QUAD-NODE-P
 >map>terrain-vars.lisp
 COPY-QUAD-NODE
 >map>terrain-vars.lisp
 MAKE-QUAD-NODE
 >map>terrain-vars.lisp
Description: None

2.4.2.10.27 '(AREA-ROAD-SEGMENTS AREA-ROAD-INTERSECTIONS

Definition 27

AREA-WATER-SEGMENTS
AREA-WATER-INTERSECTIONS
AREA-BRIDGES
AREA-RAIL-SEGMENTS
AREA-OBJECTS
AREA-TREES
AREA-COLOUR-LINES
AREA-CANOPIES
AREA-CANOPY-TRIANGLES
AREA-WATER
AREA-WATER-TRIANGLES)

>map>terrain-vars.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.10.28 FEATURE-NODE

Definition 28

>map>terrain-vars.lisp

Type: DEFSTRUCT

Arguments: ()

Outputs:

Calls: None

Called by: FEATURE-NODE-P

>map>terrain-vars.lisp

COPY-FEATURE-NODE

>map>terrain-vars.lisp

MAKE-FEATURE-NODE

>map>terrain-vars.lisp

Description: None

2.4.2.10.29 *FEATURE-LIST*

Definition 29

>map>terrain-vars.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: BRIDGE

>map>terrain-vars.lisp

Called by: None

Description: None

2.4.2.10.30 '(SEGMENT-POINTS SEGMENT-WIDTH SEGMENT-HEIGHT SEGMENT-ELEVATION)

Definition 30

>map>terrain-*vars.lisp*
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.31 SEGMENT

Definition 31

>map>terrain-*vars.lisp*
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: SEGMENT-P
>map>terrain-*vars.lisp*
COPY-SEGMENT
>map>terrain-*vars.lisp*
MAKE-SEGMENT
>map>terrain-*vars.lisp*
Description: None

2.4.2.10.32 SEGMENT-HEIGHT

Definition 32

>map>terrain-*vars.lisp*
Type: Subst
Arguments: (SEGMENT)
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.33 SEGMENT-ELEVATION

Definition 33

>map>terrain-*vars.lisp*
Type: Subst
Arguments: (SEGMENT)
Outputs:
Calls: None

Called by: HEIGHT-AT-POINT
>map>draw-terrain.lisp
DRAW-ALL-CONTOURS
>map>draw-terrain.lisp
DRAW-CONTOURS
>map>draw-terrain.lisp

Description: None

2.4.2.10.34 '(NET-POINTS NET-WIDTH

Definition 34

NET-DISTANCE
NET-FORDABLE
NET-BRIDGE
INTERSECTION-POS-X
INTERSECTION-POS-Y
INTERSECTION-PAIRS
INTERSECTION-BRIDGE)
>map>terrain-vars.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.10.35 NETWORK-SEGMENT

Definition 35

>map>terrain-vars.lisp

Type: DEFSTRUCT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.10.36 NETWORK-INTERSECTION

Definition 36

>map>terrain-vars.lisp

Type: DEFSTRUCT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.10.37 '(BRIDGE-POINTS BRIDGE-NODE BRIDGE-WIDTH)
Definition 37

>map>terrain-vars.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.10.38 BRIDGE
Definition 38

>map>terrain-vars.lisp
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: BRIDGE-P
 >map>terrain-vars.lisp
 COPY-BRIDGE
 >map>terrain-vars.lisp
 MAKE-BRIDGE
 >map>terrain-vars.lisp
 FEATURE-LIST
 >map>terrain-vars.lisp
Description: None

2.4.2.11 CSU map>utilities.lisp

This unit contains macro definitions used by the terrain drawing routines. These macros are used to transform the terrain database world coordinates to color screen (pixel) coordinates. The macros *with-map-graphics*, *with-fast-map-graphics*, and *with-ultra-fast-map-graphics* encapsulate commonly used drawing code, for convenience and modularity.

This unit also contains general graphics utility routines, such as the Euclidean *distance* function, and a defsubst *near* that determines if two numbers are within a given tolerance. Also included is a function *safe-atan* that returns $\arctan(y/x)$, giving the correct value of $\pi/2$ or $-\pi/2$ when x is zero and y is nonzero. (The Common Lisp atan function is required by the language standard to handle these cases properly; safe-atan, originally from earlier Zeta-Lisp code, does not rely on this.)

2.4.2.11.1 PIE
Definition 1

>map>utilities.lisp
Type: Constant
Arguments: ()
Outputs:
Calls: None

Called by: ROTATABLE-RECTANGLE
>map>control.lisp
DRAW-ARROW
>map>control.lisp
DRAW-2-SCALLOPED-LINES
>map>control.lisp
DRAW-1-SCALLOPED-LINE
>map>control.lisp
DRAW-UNIT-SYMBOL
>map>control.lisp
POINT-LINE-INTERSECTION
>map>intersection.lisp
DRAW-BRIDGE-SYMBOL
>map>vectors.lisp
SAFE-ATAN
>map>utilities.lisp
OFFSET-POINT
>saf>cm>water-avoidance.lisp
EXTEND-SEGMENT
>saf>cm>water-avoidance.lisp
ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp

Description: None

2.4.2.11.2 GRAPHICS-TRANSFORM

Definition 2

>map>utilities.lisp
Type: DEFSTRUCT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.11.3 WITH-INTEGER-CONVERSION-MODE

Definition 3

>map>utilities.lisp
Type: Macro
Arguments: ((WINDOW) &BODY BODY)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
Called by: SELECT-POLYGON
>map>control.lisp
RUBBER-LINE
>map>control.lisp
DRAW-ARROW
>map>control.lisp

DRAW-2-SCALLOPED-LINES
>map>control.lisp
DRAW-1-SCALLOPED-LINE
>map>control.lisp
DRAW-UNIT-SYMBOL
>map>control.lisp
DRAW-ROT-RECT
>map>control.lisp
(METHOD DRAW ARROW-CONTROL-MEASURE)
>map>control.lisp
(METHOD DRAW LINE-CONTROL-MEASURE)
>map>control.lisp
(METHOD DRAW AREA-CONTROL-MEASURE)
>map>control.lisp
DRAW-ALL-CONTOURS
>map>draw-terrain.lisp
DRAW-ALL-CANOPIES
>map>draw-terrain.lisp
DRAW-ALL-RIVERS
>map>draw-terrain.lisp
DRAW-WATER-OR-LAND-TRIANGLES
>map>draw-terrain.lisp
DRAW-ALL-ROADS
>map>draw-terrain.lisp
DRAW-ALL-RAILS
>map>draw-terrain.lisp
DRAW-RAILS
>map>draw-terrain.lisp
DRAW-WATER-OR-LAND-TRIANGLES-MAYBE
>map>draw-terrain.lisp
DRAW-WATER
>map>draw-terrain.lisp
DRAW-CANOPY-TRIANGLES
>map>draw-terrain.lisp
DRAW-OBJECTS
>map>draw-terrain.lisp
DRAW-CONTOURS
>map>draw-terrain.lisp
DRAW-TREES
>map>draw-terrain.lisp
DRAW-ROADS
>map>draw-terrain.lisp
(METHOD DRAW-GRIDS UTM-GRID-MIXIN)
>map>grids.lisp
(METHOD WORLD-TO-.MOUSE SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD MOUSE-TO-WORLD SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD DRAW-REGION SCALABLE-WINDOW)
>map>scalable-window.lisp
DRAW-BRIDGE-SYMBOL
>map>vectors.lisp
DRAW-VEHICLE
>saf>simnet-objects>new-draw-vehicles.lisp

(METHOD COM-ZOOM-OUT-INTERNAL PVD)
No Source File Record
(METHOD COM-PAN-INTERNAL PVD)
No Source File Record
(METHOD COM-ZOOM-IN-INTERNAL PVD)
No Source File Record
GET-LOCATION-AND-BEARING
>saf>sandbox>utilities.lisp
(METHOD INSERT-POINT-AFTER GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD DELETE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD MOVE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD PAINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD INSERT-POINT-BEFORE LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-AFTER LINE)
>saf>cm>line.lisp
(METHOD DELETE-POINT LINE)
>saf>cm>line.lisp
(METHOD MOVE-POINT LINE)
>saf>cm>line.lisp
(METHOD PAINT LINE)
>saf>cm>line.lisp
(METHOD ERASE CM-POINT)
>saf>cm>point.lisp
(METHOD DRAW CM-POINT)
>saf>cm>point.lisp
MAKE-ROUTE
>saf>cm>route.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD DELETE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD PAINT ROUTE)
>saf>cm>route.lisp
GET-BRIDGE-ROUTE
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE
>saf>cm>road-routes.lisp
GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
(METHOD DRAW-AS-FIRST-POINT CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD PAINT CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD ERASE-NAME CONTROL-MEASURE)
>saf>cm>control-measure.lisp

```
(METHOD DRAW-NAME CONTROL-MEASURE)
>saf>cm>control-measure.lisp
DRAW-UNIT
>saf>simnet-objects>draw-units.lisp
DRAW-ARTY
>saf>simnet-objects>draw-effects.lisp
DRAW-IMPACT
>saf>simnet-objects>draw-effects.lisp
(METHOD DRAW-MISSILE-IMAGE MISSILE-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE RD-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-IMAGE FIGHTER-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-IMAGE HELO-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
(METHOD HIGHLIGHT SIMNET-AGENT)
>saf>objects>simnet-agent.lisp
DRAW-STEALTH
>saf>sys>utilities.lisp
WITH-ULTRA-FAST-Graphics
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
```

Description: None

2.4.2.11.4 'WITH-MAP-Graphics

Definition 4

>map>utilities.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.11.5 WITH-MAP-Graphics

Definition 5

>map>utilities.lisp
Type: Macro
Arguments: ((WINDOW) &BODY BODY)
Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
Called by: SELECT-POLYGON
>map>control.lisp
RUBBER-LINE
>map>control.lisp
DRAW-ARROW
>map>control.lisp
DRAW-2-SCALLOPED-LINES
>map>control.lisp
DRAW-1-SCALLOPED-LINE
>map>control.lisp
DRAW-UNIT-SYMBOL
>map>control.lisp
DRAW-ROT-RECT
>map>control.lisp
(METHOD DRAW ARROW-CONTROL-MEASURE)
>map>control.lisp
(METHOD DRAW LINE-CONTROL-MEASURE)
>map>control.lisp
(METHOD DRAW AREA-CONTROL-MEASURE)
>map>control.lisp
DRAW-RAILS
>map>draw-terrain.lisp
DRAW-ROADS
>map>draw-terrain.lisp
(METHOD DRAW-GRIDS UTM-GRID-MIXIN)
>map>grids.lisp
(METHOD WORLD-TO-.MOUSE SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD MOUSE-TO-WORLD SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD DRAW-REGION SCALABLE-WINDOW)
>map>scalable-window.lisp
DRAW-BRIDGE-SYMBOL
>map>vectors.lisp
DRAW-VEHICLE
>saf>simnet-objects>new-draw-vehicles.lisp
(METHOD COM-ZOOM-OUT-INTERNAL PVD)
No Source File Record
(METHOD COM-PAN-INTERNAL PVD)
No Source File Record
(METHOD COM-ZOOM-IN-INTERNAL PVD)
No Source File Record
GET-LOCATION-AND-BEARING
>saf>sandbox>utilities.lisp
(METHOD INSERT-POINT-AFTER GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD DELETE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD MOVE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp

```
(METHOD PAINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD INSERT-POINT-BEFORE LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-AFTER LINE)
>saf>cm>line.lisp
(METHOD DELETE-POINT LINE)
>saf>cm>line.lisp
(METHOD MOVE-POINT LINE)
>saf>cm>line.lisp
(METHOD PAINT LINE)
>saf>cm>line.lisp
(METHOD ERASE CM-POINT)
>saf>cm>point.lisp
(METHOD DRAW CM-POINT)
>saf>cm>point.lisp
MAKE-ROUTE
>saf>cm>route.lisp
(METHOD INSERT-POINT-BEFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD DELETE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD PAINT ROUTE)
>saf>cm>route.lisp
GET-BRIDGE-ROUTE
>saf>cm>road-routes.lisp
DRAW-EXPANDED-ROUTE
>saf>cm>road-routes.lisp
GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
(METHOD DRAW-AS-FIRST-POINT CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD PAINT CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD ERASE-NAME CONTROL-MEASURE)
>saf>cm>control-measure.lisp
(METHOD DRAW-NAME CONTROL-MEASURE)
>saf>cm>control-measure.lisp
DRAW-UNIT
>saf>simnet-objects>draw-units.lisp
DRAW-ARTY
>saf>simnet-objects>draw-effects.lisp
DRAW-IMPACT
>saf>simnet-objects>draw-effects.lisp
(METHOD DRAW-MISSILE-IMAGE MISSILE-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE RD-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
```

```
(METHOD DRAW-IMAGE FIGHTER-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-IMAGE HELO-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
(METHOD HIGHLIGHT SIMNET-AGENT)
>saf>objects>simnet-agent.lisp
DRAW-STEALTH
>saf>sys>utilities.lisp
WORLD-TO-SCREEN
>map>utilities.lisp
SCREEN-TO-WORLD
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-CORRECT-MAP-Graphics
>saf>simnet-objects>draw-vehicles.lisp
```

Description: None

2.4.2.11.6 WITH-FAST-MAP-Graphics

Definition 6

>map>utilities.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.11.7 WITH-FAST-MAP-Graphics

Definition 7

>map>utilities.lisp
Type: Macro
Arguments: ((WINDOW) &BODY BODY)
Outputs:
Calls: WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
Called by: SELECT-POLYGON
>map>control.lisp
RUBBER-LINE
>map>control.lisp
DRAW-ARROW
>map>control.lisp

DRAW-2-SCALLOPED-LINES
>map>control.lisp
DRAW-1-SCALLOPED-LINE
>map>control.lisp
DRAW-UNIT-SYMBOL
>map>control.lisp
DRAW-ROT-RECT
>map>control.lisp
(METHOD DRAW ARROW-CONTROL-MEASURE)
>map>control.lisp
(METHOD DRAW LINE-CONTROL-MEASURE)
>map>control.lisp
(METHOD DRAW AREA-CONTROL-MEASURE)
>map>control.lisp
DRAW-RAILS
>map>draw-terrain.lisp
DRAW-ROADS
>map>draw-terrain.lisp
(METHOD DRAW-GRIDS UTM-GRID-MIXIN)
>map>grids.lisp
(METHOD DRAW-REGION SCALABLE-WINDOW)
>map>scalable-window.lisp
DRAW-BRIDGE-SYMBOL
>map>vectors.lisp
(METHOD INSERT-POINT-AFTER GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD DELETE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD MOVE-POINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD PAINT GENERIC-AREA)
>saf>cm>generic-area.lisp
(METHOD INSERT-POINT-BEFORE LINE)
>saf>cm>line.lisp
(METHOD INSERT-POINT-AFTER LINE)
>saf>cm>line.lisp
(METHOD DELETE-POINT LINE)
>saf>cm>line.lisp
(METHOD MOVE-POINT LINE)
>saf>cm>line.lisp
(METHOD PAINT LINE)
>saf>cm>line.lisp
(METHOD ERASE CM-POINT)
>saf>cm>point.lisp
MAKE-ROUTE
>saf>cm>route.lisp
(METHOD INSERT-POINT-BFFORE ROUTE)
>saf>cm>route.lisp
(METHOD INSERT-POINT-AFTER ROUTE)
>saf>cm>route.lisp
(METHOD DELETE-POINT ROUTE)
>saf>cm>route.lisp
(METHOD MOVE-POINT ROUTE)
>saf>cm>route.lisp

```
(METHOD PAINT ROUTE)
>saf>cm>route.lisp
DRAW-EXPANDED-ROUTE
>saf>cm>road-routes.lisp
(METHOD DRAW-AS-FIRST-POINT CONTROL-MEASURE-POINT)
>saf>cm>control-measure-point.lisp
(METHOD ERASE-NAME CONTROL-MEASURE)
>saf>cm>control-measure.lisp
DRAW-ARTY
>saf>simnet-objects>draw-effects.lisp
DRAW-IMPACT
>saf>simnet-objects>draw-effects.lisp
(METHOD DRAW-MISSILE-IMAGE MISSILE-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE RD-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-IMAGE FIGHTER-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-IMAGE HELO-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
(METHOD HIGHLIGHT SIMNET-AGENT)
>saf>objects>simnet-agent.lisp
DRAW-STEALTH
>saf>sys>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
WITH-CORRECT-MAP-Graphics
>saf>simnet-objects>draw-vehicles.lisp
```

Description: None

2.4.2.11.8 'SCREEN-TO-WORLD

Definition 8

>map>utilities.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.11.9 SCREEN-TO-WORLD

Definition 9

>map>utilities.lisp
Type: Macro
Arguments: (WINDOW &REST POINTS)
Outputs:
Calls: WITH-MAP-GRAFICS
>map>utilities.lisp
SCREEN-TO-WORLD
>map>utilities.lisp
Called by: (METHOD MOUSE-TO-WORLD SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD COM-ZOOM-OUT-INTERNAL PVD)
No Source File Record
(METHOD COM-PAN-INTERNAL PVD)
No Source File Record
(METHOD COM-ZOOM-IN-INTERNAL PVD)
No Source File Record
GET-LOCATION-AND-BEARING
>saf>sandbox>utilities.lisp
GET-BRIDGE-ROUTE
>saf>cm>road-routes.lisp
GET-ROAD-ROUTE
>saf>cm>road-routes.lisp
SCREEN-TO-WORLD
>map>utilities.lisp
Description: None

2.4.2.11.10 'WORLD-TO-SCREEN

Definition 10

>map>utilities.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.11.11 WORLD-TO-SCREEN

Definition 11

>map>utilities.lisp
Type: Macro
Arguments: (WINDOW &REST POINTS)
Outputs:
Calls: WITH-MAP-GRAFICS
>map>utilities.lisp
WORLD-TO-SCREEN
>map>utilities.lisp

Called by: (METHOD WORLD-TO-MOUSE SCALABLE-WINDOW)
>map>scalable-window.lisp
DRAW-VEHICLE
>saf>simnet-objects>new-draw-vehicles.lisp
WORLD-TO-SCREEN
>map>utilities.lisp

Description: None

2.4.2.11.12 WITH-ULTRA-FAST-Graphics

Definition 12

>map>utilities.lisp
Type: Macro
Arguments: ((STREAM) &BODY BODY)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-ULTRA-FAST-Graphics
>map>utilities.lisp
Called by: DRAW-ALL-CONTOURS
>map>draw-terrain.lisp
DRAW-ALL-CANOPIES
>map>draw-terrain.lisp
DRAW-ALL-RIVERS
>map>draw-terrain.lisp
DRAW-WATER-OR-LAND-TRIANGLES
>map>draw-terrain.lisp
DRAW-ALL-ROADS
>map>draw-terrain.lisp
DRAW-ALL-RAILS
>map>draw-terrain.lisp
DRAW-RAILS
>map>draw-terrain.lisp
DRAW-WATER-OR-LAND-TRIANGLES-MAYBE
>map>draw-terrain.lisp
DRAW-WATER
>map>draw-terrain.lisp
DRAW-CANOPY-TRIANGLES
>map>draw-terrain.lisp
DRAW-OBJECTS
>map>draw-terrain.lisp
DRAW-CONTOURS
>map>draw-terrain.lisp
DRAW-TREES
>map>draw-terrain.lisp
DRAW-ROADS
>map>draw-terrain.lisp
WITH-ULTRA-FAST-Graphics
>map>utilities.lisp

Description: None

2.4.2.11.13 FAST-WORLD-TO-SCREEN

Definition 13

>map>utilities.lisp
Type: Macro
Arguments: (&REST POINTS)
Outputs:
Calls: TRANSFORM-POINT
 >map>utilities.lisp
Called by: DRAW-ALL-CONTOURS
 >map>draw-terrain.lisp
 DRAW-ALL-CANOPIES
 >map>draw-terrain.lisp
 DRAW-ALL-RIVERS
 >map>draw-terrain.lisp
 DRAW-WATER-OR-LAND-TRIANGLES
 >map>draw-terrain.lisp
 DRAW-ALL-ROADS
 >map>draw-terrain.lisp
 DRAW-ALL-RAILS
 >map>draw-terrain.lisp
 DRAW-RAILS
 >map>draw-terrain.lisp
 DRAW-WATER-OR-LAND-TRIANGLES-MAYBE
 >map>draw-terrain.lisp
 DRAW-WATER
 >map>draw-terrain.lisp
 DRAW-CANOPY-TRIANGLES
 >map>draw-terrain.lisp
 DRAW-OBJECTS
 >map>draw-terrain.lisp
 DRAW-CONTOURS
 >map>draw-terrain.lisp
 DRAW-TREES
 >map>draw-terrain.lisp
 DRAW-ROADS
 >map>draw-terrain.lisp

Description: None

2.4.2.11.14 TRANSFORM-POINT

Definition 14

>map>utilities.lisp
Type: Function
Arguments: (X Y TRANSFORM)
Outputs:
Calls: None
Called by: DRAW-ALL-CONTOURS
 >map>draw-terrain.lisp
 DRAW-ALL-CANOPIES
 >map>draw-terrain.lisp
 DRAW-ALL-RIVERS
 >map>draw-terrain.lisp

DRAW-WATER-OR-LAND-TRIANGLES
>map>draw-terrain.lisp
DRAW-ALL-ROADS
>map>draw-terrain.lisp
DRAW-ALL-RAILS
>map>draw-terrain.lisp
DRAW-RAILS
>map>draw-terrain.lisp
DRAW-WATER-OR-LAND-TRIANGLES-MAYBE
>map>draw-terrain.lisp
DRAW-WATER
>map>draw-terrain.lisp
DRAW-CANOPY-TRIANGLES
>map>draw-terrain.lisp
DRAW-OBJECTS
>map>draw-terrain.lisp
DRAW-CONTOURS
>map>draw-terrain.lisp
DRAW-TREES
>map>draw-terrain.lisp
DRAW-ROADS
>map>draw-terrain.lisp
FAST-WORLD-TO-SCREEN
>map>utilities.lisp

Description: None

2.4.2.11.15 'DISTANCE

Definition 15

>map>utilities.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.11.16 DISTANCE

Definition 16

>map>utilities.lisp
Type: Function
Arguments: (X1 Y1 X2 Y2)
Outputs:
Calls: None
Called by: FIND-CENTER-POINT
>map>control.lisp
DRAW-2-SCALLOPED-LINES
>map>control.lisp
DRAW-1-SCALLOPED-LINE
>map>control.lisp
HEIGHT-AT-POINT

```
>map>draw-terrain.lisp
POINT-SEGMENT-INTERSECTION
>map>intersection.lisp
FIND-FORMATION-INFO
>saf>sandbox>sandbox.lisp
SORT-CMS
>saf>cm>overlay.lisp
(METHOD CM-INTERSECTION CM-POINT)
>saf>cm>point.lisp
DISTANCE-AROUND-PATH
>saf>cm>water-avoidance.lisp
PRUNE-TO-POINT
>saf>cm>water-avoidance.lisp
FIND-CLOSER-CROSSING
>saf>cm>water-avoidance.lisp
FIND-SEGMENT-CROSS-POINTS
>saf>cm>water-avoidance.lisp
WATER-THRU
>saf>cm>water-check.lisp
FIND-NEAREST-BRIDGE
>saf>cm>road-routes.lisp
GET-BRIDGE-POINTS
>saf>cm>road-routes.lisp
ROUTE-INTERSECTION
>saf>cm>road-routes.lisp
PARALLEL-DISTANCE
>saf>cm>road-routes.lisp
FIND-NEAREST-ROAD-SEGMENT
>saf>cm>road-routes.lisp
FIND-NEAREST-INTERSECTION
>saf>cm>road-routes.lisp
DISTANCE-BETWEEN-INTERSECTIONS
>saf>cm>route-finder.lisp
```

Description: None

2.4.2.11.17 'NEAR

Definition 17

>map>utilities.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.11.18 NEAR

Definition 18

>map>utilities.lisp
Type: Subst
Arguments: (POINT1 POINT2 THRESHOLD)
Outputs:

Calls: None
Called by: CALCULATE-POINT-LINE-INTERSECTION
 >saf>cm>road-routes.lisp
 EXPAND-ROUTE-INTO-POINTS
 >saf>cm>route-finder.lisp
Description: None

2.4.2.11.19 SAFE-ATAN

Definition 19

>map>utilities.lisp
Type: Function
Arguments: (DELTA-Y DELTA-X)
Outputs:
Calls: PIE
 >map>utilities.lisp
Called by: ROTATABLE-RECTANGLE
 >map>control.lisp
 FIND-CENTER-POINT
 >map>control.lisp
 DRAW-2-SCALLOPED-LINES
 >map>control.lisp
 DRAW-1-SCALLOPED-LINE
 >map>control.lisp
Description: None

2.4.2.12 CSU map>utm-grid-mixin.lisp

This unit contains the routines to convert between terrain database world coordinates and UTM coordinates. First, the letters A through Z are coerced into a vector, by the function fill-alphabet-array, to form *alphabet-array*. Functions char-to-coord and coord-to-char use this array to convert between UTM letter prefixes and numerical coordinates for the origin-corner of a lettered UTM square. The flavor utm-grid-mixin is then defined, fixing the UTM coordinates of the origin of the PVD map. This flavor has methods *world-to-utm* and *utm-to-world* that convert to and from UTM coordinates.

The unique feature of the UTM system is its ability to use shorter strings to convey less precision, but *without* using a delimiter to separate the x value and the y value. The separation is achieved by dividing the total number of digits, which must be even, by 2. In *utm-to-world*, the form (*case length* (2 ...) (4 ...) (6 ...) (8 ...) (10 ...)) does this, inferring the number of digits of precision in use, and separating the x and y values into the variables *x-num* and *y-num*. In *world-to-utm*, the precision is passed explicitly in the variable *size*, with a default value of 3. After the x and y offsets are calculated from map coordinates using *coord-to-char*, they are printed to a string using *format* and then trimmed to the specified size with *substring* calls. Finally, the digit strings are appended with the UTM letters *x-char* and *y-char*, returned by *coord-to-char*, to get the completed UTM string.

For more information on the UTM system, see the Defense Mapping Agency document DMA TM 8358.1, entitled "Datums, Ellipsoids, Grids, and Grid Reference Systems".

2.4.2.12.1 *ALPHABET-ARRAY*

Definition 1

>map>utm-grid-mixin.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: COORD-TO-CHAR
 >map>utm-grid-mixin.lisp
 CHAR-TO-COORD
 >map>utm-grid-mixin.lisp
 FILL-ALPHABET-ARRAY
 >map>utm-grid-mixin.lisp
Description: None

2.4.2.12.2 FILL-ALPHABET-ARRAY

Definition 2

>map>utm-grid-mixin.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *ALPHABET-ARRAY*
 >map>utm-grid-mixin.lisp
Called by: None
Description: None

2.4.2.12.3 NIL

Definition 3

>map>utm-grid-mixin.lisp
Type: FILL-ALPHABET-ARRAY
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.12.4 CHAR-TO-COORD

Definition 4

>map>utm-grid-mixin.lisp
Type: Function
Arguments: (CHAR)
Outputs:
Calls: *ALPHABET-ARRAY*
 >map>utm-grid-mixin.lisp

Called by: (METHOD UTM-TO-WORLD UTM-GRID-MIXIN)
>map>utm-grid-mixin.lisp
(METHOD WORLD-TO-UTM UTM-GRID-MIXIN)
>map>utm-grid-mixin.lisp

Description: None

2.4.2.12.5 COORD-TO-CHAR

Definition 5

>map>utm-grid-mixin.lisp
Type: Function
Arguments: (COORD)
Outputs:
Calls: *ALPHABET-ARRAY*
>map>utm-grid-mixin.lisp
Called by: (METHOD WORLD-TO-UTM UTM-GRID-MIXIN)
>map>utm-grid-mixin.lisp
Description: None

2.4.2.12.6 UTM-OFFSET

Definition 6

>map>utm-grid-mixin.lisp
Type: Function
Arguments: (DIGIT-STRING)
Outputs:
Calls: None
Called by: (METHOD UTM-TO-WORLD UTM-GRID-MIXIN)
>map>utm-grid-mixin.lisp
Description: None

2.4.2.12.7 'UTM-GRID-MIXIN

Definition 7

>map>utm-grid-mixin.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.12.8 UTM-GRID-MIXIN

Definition 8

>map>utm-grid-mixin.lisp
Type: Flavor
Arguments: ()
Outputs:

Calls: None
Called by: None
Description: None

2.4.2.12.9 (METHOD UPDATE UTM-GRID-MIXIN AFTER)
Definition 9

>map>utm-grid-mixin.lisp
Type: Method
Arguments: ()
Outputs:
Calls: *QUAD-TREE*
 >map>terrain-vars.lisp
Called by: None
Description: None

2.4.2.12.10 'SET-ORIGIN-UTM-COORDINATES
Definition 10

>map>utm-grid-mixin.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.12.11 (METHOD SET-ORIGIN-UTM-COORDINATES UTM-GRID-MIXIN)
Definition 11

>map>utm-grid-mixin.lisp
Type: Method
Arguments: (UTM-STRING)
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.12.12 'WORLD-TO-UTM
Definition 12

>map>utm-grid-mixin.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.12.13 (METHOD WORLD-TO-UTM UTM-GRID-MIXIN)

Definition 13

>map>utm-grid-mixin.lisp
Type: Method
Arguments: (WORLD-X WORLD-Y &KEY (SIZE 3))
Outputs:
Calls: CHAR-TO-COORD
 >map>utm-grid-mixin.lisp
 COORD-TO-CHAR
 >map>utm-grid-mixin.lisp
Called by: None
Description: None

2.4.2.12.14 'UTM-TO-WORLD

Definition 14

>map>utm-grid-mixin.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.12.15 (METHOD UTM-TO-WORLD UTM-GRID-MIXIN)

Definition 15

>map>utm-grid-mixin.lisp
Type: Method
Arguments: (UTM-STRING)
Outputs:
Calls: CHAR-TO-COORD
 >map>utm-grid-mixin.lisp
 UTM-OFFSET
 >map>utm-grid-mixin.lisp
Called by: None
Description: None

2.4.2.12.16 UTM-GRID-MIXIN

Definition 16

>map>utm-grid-mixin.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: MAP-WINDOW
 >saf>ui>frame-utils.lisp
Description: None

2.4.2.13 CSU map>vectors.lisp

This unit contains general purpose two-dimensional vector routines, as well as the routine that draws the bridge symbol. These include functions for normalizing, rotating, adding, subtracting, and scaling two-dimensional vectors. Another function finds the direction angle of a vector using the arctangent.

2.4.2.13.1 'VEC-NORMALIZE

Definition 1

>map>vectors.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.13.2 VEC-NORMALIZE

Definition 2

>map>vectors.lisp
Type: Function
Arguments: (VECTOR)
Outputs:
Calls: None
Called by: DRAW-2-SCALLOPED-LINES
 >map>control.lisp
 DRAW-1-SCALLOPED-LINE
 >map>control.lisp
 DRAW-UNIT-SYMBOL
 >map>control.lisp
 (METHOD DRAW LINE-CONTROL-MEASURE)
 >map>control.lisp
 POINT-LINE-INTERSECTION
 >map>intersection.lisp
 DRAW-BRIDGE-SYMBOL
 >map>vectors.lisp
 FIND-INTER-POINT
 >map>vectors.lisp
 VEC-ANGLE
 >map>vectors.lisp
 OFFSET-POINT
 >saf>cm>water-avoidance.lisp
 NORMALIZE-AND-ROTATE
 >saf>cm>water-avoidance.lisp
 EXTEND-SEGMENT
 >saf>cm>water-avoidance.lisp

EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp
ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp

Description: None

2.4.2.13.3 'VEC-ROTATE

Definition 3

>map>vectors.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.13.4 VEC-ROTATE

Definition 4

>map>vectors.lisp

Type: Function

Arguments: (VECTOR ANGLE)

Outputs:

Calls: None

Called by: DRAW-ARROW

>map>control.lisp

DRAW-2-SCALLOPED-LINES

>map>control.lisp

DRAW-UNIT-SYMBOL

>map>control.lisp

(METHOD DRAW BATTLE-POSITION AFTER)

>map>control.lisp

POINT-LINE-INTERSECTION

>map>intersection.lisp

DRAW-BRIDGE-SYMBOL

>map>vectors.lisp

OFFSET-POINT

>saf>cm>water-avoidance.lisp

FIND-FIRST-VECTOR

>saf>cm>water-avoidance.lisp

NORMALIZE-AND-ROTATE

>saf>cm>water-avoidance.lisp

EXTEND-SEGMENT

>saf>cm>water-avoidance.lisp

EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp
ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
(METHOD INTERVENE SIMNET-AGENT FOLLOW-VEHICLE)
>saf>objects>intervention.lisp

Description: None

2.4.2.13.5 'VEC-ADD

Definition 5

>map>vectors.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.13.6 VEC-ADD

Definition 6

>map>vectors.lisp

Type: Function

Arguments: (VECTOR-A VECTOR-B)

Outputs:

Calls: None

Called by: DRAW-ARROW

>map>control.lisp

DRAW-2-SCALLOPED-LINES

>map>control.lisp

DRAW-1-SCALLOPED-LINE

>map>control.lisp

DRAW-UNIT-SYMBOL

>map>control.lisp

(METHOD DRAW LINE-CONTROL-MEASURE)

>map>control.lisp

(METHOD DRAW BATTLE-POSITION AFTER)

>map>control.lisp

POINT-LINE-INTERSECTION

>map>intersection.lisp

DRAW-BRIDGE-SYMBOL

>map>vectors.lisp

FIND-INTER-POINT

>map>vectors.lisp

OFFSET-POINT

>saf>cm>water-avoidance.lisp

OFFSET-POINTS

>saf>cm>water-avoidance.lisp

EXTEND-SEGMENT
>saf>cm>water-avoidance.lisp
EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp
ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp

Description: None

2.4.2.13.7 'VEC-SUB

Definition 7

>map>vectors.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.13.8 VEC-SUB

Definition 8

>map>vectors.lisp

Type: Function

Arguments: (VECTOR-A VECTOR-B)

Outputs:

Calls: None

Called by: DRAW-ARROW

>map>control.lisp

FIND-CENTER-POINT

>map>control.lisp

DRAW-2-SCALLOPED-LINES

>map>control.lisp

DRAW-1-SCALLOPED-LINE

>map>control.lisp

DRAW-UNIT-SYMBOL

>map>control.lisp

(METHOD DRAW LINE-CONTROL-MEASURE)

>map>control.lisp

(METHOD DRAW BATTLE-POSITION AFTER)

>map>control.lisp

POINT-LINE-INTERSECTION

>map>intersection.lisp

DRAW-BRIDGE-SYMBOL

>map>vectors.lisp

FIND-INTER-POINT

>map>vectors.lisp

(METHOD CM-INTERSECTION CM-POINT)

>saf>cm>point.lisp

FIND-DIRECTION-AT-CROSSING

>saf>cm>water-avoidance.lisp

OFFSET-POINT
>saf>cm>water-avoidance.lisp
OFFSET-POINTS
>saf>cm>water-avoidance.lisp
FIND-SEGMENT-CROSS-POINTS
>saf>cm>water-avoidance.lisp
NORMALIZE-AND-ROTATE
>saf>cm>water-avoidance.lisp
EXTEND-SEGMENT
>saf>cm>water-avoidance.lisp
EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp
ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
(METHOD INTERVENE SIMNET-AGENT FOLLOW-VEHICLE)
>saf>objects>intervention.lisp

Description: None

2.4.2.13.9 'VEC-SCALE

Definition 9

>map>vectors.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.13.10 VEC-SCALE

Definition 10

>map>vectors.lisp
Type: Function
Arguments: (VECTOR SCALE)
Outputs:
Calls: None
Called by: DRAW-ARROW
>map>control.lisp
FIND-CENTER-POINT
>map>control.lisp
DRAW-2-SCALLOPED-LINES
>map>control.lisp
DRAW-1-SCALLOPED-LINE
>map>control.lisp
DRAW-UNIT-SYMBOL
>map>control.lisp
(METHOD DRAW LINE-CONTROL-MEASURE)

```
>map>control.lisp
DRAW-BRIDGE-SYMBOL
>map>vectors.lisp
FIND-INTER-POINT
>map>vectors.lisp
OFFSET-POINT
>saf>cm>water-avoidance.lisp
FIND-SEGMENT-CROSS-POINTS
>saf>cm>water-avoidance.lisp
EXTEND-SEGMENT
>saf>cm>water-avoidance.lisp
EXTEND-BRIDGE
>saf>cm>water-avoidance.lisp
EXTEND-INTERSECTION
>saf>cm>water-avoidance.lisp
ALL-WIDE-SEGMENTS-THRU-WATER
>saf>cm>water-check.lisp
ANY-WIDE-SEGMENT-THRU-WATER
>saf>cm>water-check.lisp
```

Description: None

2.4.2.13.11 'VEC-ANGLE

Definition 11

```
>map>vectors.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None
```

2.4.2.13.12 VEC-ANGLE

Definition 12

```
>map>vectors.lisp
Type: Function
Arguments: (VECTOR &OPTIONAL (NORMALIZE NIL))
Outputs:
Calls: VEC-NORMALIZE
      >map>vectors.lisp
Called by: OFFSET-POINT
          >saf>cm>water-avoidance.lisp
Description: None
```

2.4.2.13.13 'FIND-INTER-POINT

Definition 13

```
>map>vectors.lisp
Type: EXPORT
Arguments: ()
Outputs:
```

Calls: None
Called by: None
Description: None

2.4.2.13.14 FIND-INTER-POINT

Definition 14

>map>vectors.lisp
Type: Function
Arguments: (LENGTH X1 Y1 X2 Y2)
Outputs:
Calls: VEC-NORMALIZE
 >map>vectors.lisp
 VEC-ADD
 >map>vectors.lisp
 VEC-SUB
 >map>vectors.lisp
 VEC-SCALE
 >map>vectors.lisp
Called by: GET-BRIDGE-POINTS
 >saf>cm>road-routes.lisp
Description: None

2.4.2.13.15 DRAW-BRIDGE-SYMBOL

Definition 15

>map>vectors.lisp
Type: Function
Arguments: (POINTS ALU STREAM)
Outputs:
Calls: PIE
 >map>utilities.lisp
 WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-GRAFICS
 >map>utilities.lisp
 WITH-FAST-MAP-GRAFICS
 >map>utilities.lisp
 VEC-NORMALIZE
 >map>vectors.lisp
 VEC-ROTATE
 >map>vectors.lisp
 VEC-ADD
 >map>vectors.lisp
 VEC-SUB
 >map>vectors.lisp
 VEC-SCALE
 >map>vectors.lisp
Called by: DRAW-BRIDGES
 >map>draw-terrain.lisp
Description: None

2.4.2.14 CSU map>zoom-levels.lisp

This unit defines the zoom level structure, which is used to store information about what is drawn at each zoom level. This information is stored with each quadtree structure. Routines are provided to access this zoom information. The zoom-level structure, defined by a defstruct, contains a number of slots that determine how the PVD is to be drawn at each zoom level. In general, as the level of magnification goes up, choices are made that increase the realism of the picture. At low magnification, simpler drawing methods are used for speed.

The first slot, meters-per-pixel, defines the actual numerical scale. The scale-string is a descriptive string used on the menu and legend, such as "1:50,000". The major and minor contour-line-intervals determine the altitude increments at which contour lines are drawn. The contour-point-interval determines how finely contour lines are drawn: 1 means draw every point, 2 means draw every other point, etc. The boolean variables draw-treelines and draw-treelines-as-spline determine if treelines are drawn, and whether splines are used instead of straight line segments.

Other boolean variables determine whether roads and railroads are drawn as narrow lines or with their width shown, and whether the zoom-level is included in the user's menu. Finally, anchor coordinates locate the center of the screen, and legend size and length determine the size of the legend box.

2.4.2.14.1 ZOOM-LEVEL

Definition 1

>map>zoom-levels.lisp

Type: DEFSTRUCT

Arguments: ()

Outputs:

Calls: None

Called by: MAKE-FT-KNOX-ZOOM-LEVELS

>map>zoom-levels.lisp

ZOOM-LEVEL-P

>map>zoom-levels.lisp

COPY-ZOOM-LEVEL

>map>zoom-levels.lisp

MAKE-ZOOM-LEVEL

>map>zoom-levels.lisp

Description: None

2.4.2.14.2 '*ZOOM-LEVELS*

Definition 2

>map>zoom-levels.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.14.3 *ZOOM-LEVELS*

Definition 3

>map>zoom-levels.lisp
Type: Variable
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-MAP
 >map>draw-terrain.lisp
 (METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD UPDATE SCALABLE-WINDOW)
 >map>scalable-window.lisp
 NEXT-ZOOM-IN
 >map>zoom-levels.lisp
 NEXT-ZOOM-OUT
 >map>zoom-levels.lisp
 (METHOD ADJUST-VIEWPORT SCENARIO)
 >saf>sys>new-storage.lisp
 RESCALE-PVD-FROM-MENU
 >saf>ui>commands.lisp
 (METHOD TOP-LEVEL SAF)
 >saf>ui>frame.lisp
 SET-UP-PVD-SCALE
 >saf>ui>frame.lisp
 DRAW-ANOTHER-TERRAIN-QUAD
 >saf>sys>update-process.lisp
 DRAW-MAP
 >saf>sys>update-process.lisp
 PROCESS-USER-COMMAND
 >saf>sys>update-process.lisp

Description: None

2.4.2.14.4 **CURRENT-ZOOM-LEVEL*

Definition 4

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.5 *CURRENT-ZOOM-LEVEL*

Definition 5

>map>zoom-levels.lisp
Type: Variable
Arguments: ()
Outputs:

Calls: None

Called by: (METHOD ZOOM-OUT SCALABLE-WINDOW)

>map>scalable-window.lisp
(METHOD ZOOM-IN SCALABLE-WINDOW)
>map>scalable-window.lisp
DRAW-ALL-CONTOURS
>map>draw-terrain.lisp
DRAW-RAILS
>map>draw-terrain.lisp
DRAW-WATER
>map>draw-terrain.lisp
MOVE-DOWN-CONTOUR-LIST
>map>draw-terrain.lisp
DRAW-CONTOURS
>map>draw-terrain.lisp
DRAW-TREES
>map>draw-terrain.lisp
DRAW-ROADS
>map>draw-terrain.lisp
DRAW-TERRAIN
>map>draw-terrain.lisp
DRAW-MAP
>map>draw-terrain.lisp
(METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
(METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-TO SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD UPDATE SCALABLE-WINDOW)
>map>scalable-window.lisp
MAKE-HUNTERLGT-ZOOM-LEVELS
>map>zoom-levels.lisp
NEXT-ZOOM-IN
>map>zoom-levels.lisp
NEXT-ZOOM-OUT
>map>zoom-levels.lisp
LEGEND-LENGTH
>map>zoom-levels.lisp
LEGEND-SIZE
>map>zoom-levels.lisp
CURRENT-ANCHOR-Y
>map>zoom-levels.lisp
CURRENT-ANCHOR-X
>map>zoom-levels.lisp
CURRENT-SCALE
>map>zoom-levels.lisp
DRAW-RAILS-WITH-WIDTH
>map>zoom-levels.lisp
DRAW-WATER-WITH-WIDTH

```
>map>zoom-levels.lisp
DRAW-ROADS-WITH-WIDTH
>map>zoom-levels.lisp
DRAW-TREELINE-AS-SPLINE
>map>zoom-levels.lisp
DRAW-TREELINES
>map>zoom-levels.lisp
CONTOUR-POINT-INTERVAL
>map>zoom-levels.lisp
MINOR-CONTOUR-LINE-INTERVAL
>map>zoom-levels.lisp
MAJOR-CONTOUR-LINE-INTERVAL
>map>zoom-levels.lisp
SCALE-STRING
>map>zoom-levels.lisp
(METHOD COM-REFRESH-INTERNAL PVD)
No Source File Record
(METHOD COM-RESCALE-INTERNAL PVD)
No Source File Record
RESCALE-PVD-FROM-MENU
>saf>ui>commands.lisp
(METHOD TOP-LEVEL SAF)
>saf>ui>frame.lisp
SET-UP-PVD-SCALE
>saf>ui>frame.lisp
DRAW-ANOTHER-TERRAIN-QUAD
>saf>sys>update-process.lisp
DRAW-MAP
>saf>sys>update-process.lisp
PROCESS-NEW-MAP-OPTIONS
>saf>sys>update-process.lisp
```

Description: None

2.4.2.14.6 'SCALE-STRING

Definition 6

```
>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None
```

2.4.2.14.7 SCALE-STRING

Definition 7

```
>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
```

Calls: *CURRENT-ZOOM-LEVEL*
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp

Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)
>map>legend.lisp
(METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)
>map>scalable-window.lisp
RESCALE-PVD-FROM-MENU
>saf>ui>commands.lisp

Description: None

2.4.2.14.8 'MAJOR-CONTOUR-LINE-INTERVAL

Definition 8

>map>zoom-levels.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.14.9 MAJOR-CONTOUR-LINE-INTERVAL

Definition 9

>map>zoom-levels.lisp

Type: Subst

Arguments: ()

Outputs:

Calls: *CURRENT-ZOOM-LEVEL*

>map>zoom-levels.lisp

CURRENT-ZOOM-LEVEL

>map>zoom-levels.lisp

Called by: DRAW-ALL-CONTOURS

>map>draw-terrain.lisp

DRAW-CONTOURS

>map>draw-terrain.lisp

(METHOD DRAW-LEGEND LEGEND-WINDOW)

>map>legend.lisp

Description: None

2.4.2.14.10 'MINOR-CONTOUR-LINE-INTERVAL

Definition 10

>map>zoom-levels.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None
Called by: None
Description: None

2.4.2.14.11 MINOR-CONTOUR-LINE-INTERVAL

Definition 11

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: DRAW-ALL-CONTOURS
 >map>draw-terrain.lisp
 DRAW-CONTOURS
 >map>draw-terrain.lisp
 (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
Description: None

2.4.2.14.12 'CONTOUR-POINT-INTERVAL

Definition 12

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.13 CONTOUR-POINT-INTERVAL

Definition 13

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: MOVE-DOWN-CONTOUR-LIST
 >map>draw-terrain.lisp
Description: None

2.4.2.14.14 'DRAW-TREELINES

Definition 14

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.15 DRAW-TREELINES

Definition 15

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: DRAW-TERRAIN
 >map>draw-terrain.lisp
Description: None

2.4.2.14.16 'DRAW-TREELINE-AS- SPLINE

Definition 16

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.17 DRAW-TREELINE-AS- SPLINE

Definition 17

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: DRAW-TREES
 >map>draw-terrain.lisp
Description: None

2.4.2.14.18 'DRAW-ROADS-WITH-WIDTH

Definition 18

>map>zoom-levels.lisp
Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.2.14.19 DRAW-ROADS-WITH-WIDTH

Definition 19

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: DRAW-ROADS
 >map>draw-terrain.lisp
Description: None

2.4.2.14.20 'DRAW-WATER-WITH-WIDTH

Definition 20

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.21 DRAW-WATER-WITH-WIDTH

Definition 21

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: DRAW-WATER
 >map>draw-terrain.lisp
Description: None

2.4.2.14.22 'DRAW-RAILS-WITH-WIDTH

Definition 22

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.23 DRAW-RAILS-WITH-WIDTH

Definition 23

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: DRAW-RAILS
 >map>draw-terrain.lisp
Description: None

2.4.2.14.24 'CURRENT-SCALE

Definition 24

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.25 CURRENT-SCALE

Definition 25

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp

Called by: (METHOD ZOOM-OUT SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-IN SCALABLE-WINDOW)
>map>scalable-window.lisp
DRAW-MAP
>map>draw-terrain.lisp
(METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-TO SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD COM-REFRESH-INTERNAL PVD)
No Source File Record
(METHOD COM-RESCALE-INTERNAL PVD)
No Source File Record
SET-UP-PVD-SCALE
>saf>ui>frame.lisp
PROCESS-NEW-MAP-OPTIONS
>saf>sys>update-process.lisp

Description: None

2.4.2.14.26 'CURRENT-ANCHOR-X

Definition 26

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.27 CURRENT-ANCHOR-X

Definition 27

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: (METHOD ZOOM-OUT SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD ZOOM-IN SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW)
 >map>scalable-window.lisp

(METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-TO SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD COM-RESCALE-INTERNAL PVD)
No Source File Record
SET-UP-PVD-SCALE
>saf>ui>frame.lisp

Description: None

2.4.2.14.28 'CURRENT-ANCHOR-Y

Definition 28

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.29 CURRENT-ANCHOR-Y

Definition 29

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
Called by: (METHOD ZOOM-OUT SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-IN SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD ZOOM-TO SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)
>map>scalable-window.lisp
(METHOD COM-RESCALE-INTERNAL PVD)
No Source File Record
SET-UP-PVD-SCALE
>saf>ui>frame.lisp
Description: None

2.4.2.14.30 'LEGEND-SIZE
Definition 30

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.31 LEGEND-SIZE
Definition 31

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
Description: None

2.4.2.14.32 'LEGEND-LENGTH
Definition 32

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.33 LEGEND-LENGTH
Definition 33

>map>zoom-levels.lisp
Type: Subst
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
Description: None

2.4.2.14.34 'NEXT-ZOOM-OUT

Definition 34

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.35 NEXT-ZOOM-OUT

Definition 35

>map>zoom-levels.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *ZOOM-LEVELS*
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
 ZOOM-LEVELS
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: (METHOD ZOOM-OUT SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW)
 >map>scalable-window.lisp
Description: None

2.4.2.14.36 'NEXT-ZOOM-IN

Definition 36

>map>zoom-levels.lisp
Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.2.14.37 NEXT-ZOOM-IN

Definition 37

>map>zoom-levels.lisp
Type: Function
Arguments: ()
Outputs:

Calls: *ZOOM-LEVELS*
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp
ZOOM-LEVELS
>map>zoom-levels.lisp
CURRENT-ZOOM-LEVEL
>map>zoom-levels.lisp

Called by: (METHOD ZOOM-IN SCALABLE-WINDOW)

>map>scalable-window.lisp
(METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW)
>map>scalable-window.lisp

Description: None

2.4.2.14.38 **MAKE-FT-KNOX-ZOOM-LEVELS**

Definition 38

>map>zoom-levels.lisp

Type: Function

Arguments: ()

Outputs:

Calls: ZOOM-LEVEL

>map>zoom-levels.lisp

Called by: **MAKE-HUNTERLGT-ZOOM-LEVELS**

>map>zoom-levels.lisp

Description: None

2.4.2.14.39 ***ZOOM-LEVELS***

Definition 39

>map>zoom-levels.lisp

Type: SETQ

Arguments: ()

Outputs:

Calls: None

Called by: DRAW-MAP

>map>draw-terrain.lisp

(METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)

>map>scalable-window.lisp

(METHOD UPDATE SCALABLE-WINDOW)

>map>scalable-window.lisp

NEXT-ZOOM-IN

>map>zoom-levels.lisp

NEXT-ZOOM-OUT

>map>zoom-levels.lisp

(METHOD ADJUST-VIEWPORT SCENARIO)

>saf>sys>new-storage.lisp

RESCALE-PVD-FROM-MENU

>saf>ui>commands.lisp

(METHOD TOP-LEVEL SAF)

>saf>ui>frame.lisp

SET-UP-PVD-SCALE
>saf>ui>frame.lisp
DRAW-ANOTHER-TERRAIN-QUAD
>saf>sys>update-process.lisp
DRAW-MAP
>saf>sys>update-process.lisp
PROCESS-USER-COMMAND
>saf>sys>update-process.lisp

Description: None

2.4.2.14.40 *CURRENT-ZOOM-LEVEL*

Definition 40

>map>zoom-levels.lisp
Type: SETQ
Arguments: ()
Outputs:
Calls: None
Called by: (METHOD ZOOM-OUT SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD ZOOM-IN SCALABLE-WINDOW)
 >map>scalable-window.lisp
 DRAW-ALL-CONTOURS
 >map>draw-terrain.lisp
 DRAW-RAILS
 >map>draw-terrain.lisp
 DRAW-WATER
 >map>draw-terrain.lisp
 MOVE-DOWN-CONTOUR-LIST
 >map>draw-terrain.lisp
 DRAW-CONTOURS
 >map>draw-terrain.lisp
 DRAW-TREES
 >map>draw-terrain.lisp
 DRAW-ROADS
 >map>draw-terrain.lisp
 DRAW-TERRAIN
 >map>draw-terrain.lisp
 DRAW-MAP
 >map>draw-terrain.lisp
 (METHOD DRAW-LEGEND LEGEND-WINDOW)
 >map>legend.lisp
 (METHOD ZOOM-OUT-AROUND-CENTER SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD ZOOM-IN-AROUND-CENTER SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD ZOOM-TO SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD RESCALE-FROM-MENU SCALABLE-WINDOW)
 >map>scalable-window.lisp
 (METHOD UPDATE SCALABLE-WINDOW)
 >map>scalable-window.lisp
 MAKE-HUNTERLGT-ZOOM-LEVELS

```
>map>zoom-levels.lisp
NEXT-ZOOM-IN
>map>zoom-levels.lisp
NEXT-ZOOM-OUT
>map>zoom-levels.lisp
LEGEND-LENGTH
>map>zoom-levels.lisp
LEGEND-SIZE
>map>zoom-levels.lisp
CURRENT-ANCHOR-Y
>map>zoom-levels.lisp
CURRENT-ANCHOR-X
>map>zoom-levels.lisp
CURRENT-SCALE
>map>zoom-levels.lisp
DRAW-RAILS-WITH-WIDTH
>map>zoom-levels.lisp
DRAW-WATER-WITH-WIDTH
>map>zoom-levels.lisp
DRAW-ROADS-WITH-WIDTH
>map>zoom-levels.lisp
DRAW-TREELINE-AS-SPLINE
>map>zoom-levels.lisp
DRAW-TREELINES
>map>zoom-levels.lisp
CONTOUR-POINT-INTERVAL
>map>zoom-levels.lisp
MINOR-COUNTER-LINE-INTERVAL
>map>zoom-levels.lisp
MAJOR-COUNTER-LINE-INTERVAL
>map>zoom-levels.lisp
SCALE-STRING
>map>zoom-levels.lisp
(METHOD COM-REFRESH-INTERNAL PVD)
No Source File Record
(METHOD COM-RESCALE-INTERNAL PVD)
No Source File Record
RESCALE-PVD-FROM-MENU
>saf>ui>commands.lisp
(METHOD TOP-LEVEL SAF)
>saf>ui>frame.lisp
SET-UP-PVD-SCALE
>saf>ui>frame.lisp
DRAW-ANOTHER-TERRAIN-QUAD
>saf>sys>update-process.lisp
DRAW-MAP
>saf>sys>update-process.lisp
PROCESS-NEW-MAP-OPTIONS
>saf>sys>update-process.lisp
Description: None
```

2.4.2.14.41 MAKE-HUNTERLT-ZOOM-LEVELS
Definition 41

>map>zoom-levels.lisp
Type: Function
Arguments: ()
Outputs:
Calls: *CURRENT-ZOOM-LEVEL*
 >map>zoom-levels.lisp
 MAKE-FT-KNOX-ZOOM-LEVELS
 >map>zoom-levels.lisp
 CURRENT-ZOOM-LEVEL
 >map>zoom-levels.lisp
Called by: None
Description: None

2.4.2.15 CSU map>draw-terrain.lisp

This unit contains the routines for drawing all of the terrain features on the Symbolics color screen. At the highest map scale, the drawing routines just use the terrain feature arrays. At all other map scales, the terrain quadtree and line clipping routines are used to determine which features to draw. A global variable holds the types of terrain features to draw, which can be changed by the user, via menus. These features include roads, rivers, lakes and oceans, railroads, bridges, trees, buildings, contour-lines, the grid, and control-measures.

2.4.3 Vehicle and Effects Display CSC

This CSC contains the code to draw the vehicle icons and the fire effects on the map display. It contains the following CSUs:

```
color-window>color-alus.lisp csu
fonts>bluefor-icons.bfd csu
fonts>opfor-icons.bfd csu
simnet-objects>draw-vehicles.lisp csu
simnet-objects>new-draw-vehicles.lisp csu
simnet-objects>draw-effects csu
simnet-objects>draw-units csu
```

2.4.3.1 CSU color-window>color-alus.lisp

This unit contains the routines that generate the color alus and colormap entries for the Symbolics color system to display vehicle icons and weapon effects.

The vehicles are displayed in the fourth and fifth bits of the 8 bit color system pixels. The weapon effects are displayed in the sixth and seventh bits, and the eighth bit is used for drawing the control measures. The first, second and third bits, numbered 0, 1, and 2, are used for terrain colors.

The SAF color display uses a bit-plane scheme that effectively allows certain kinds of features to mask others. This saves time when erasing vehicles and effects, because the background terrain features are still there, and simply reappear; they don't have to be redrawn. The scheme is based on an 8-bit representation of an integer index into the Symbolics color-map of 256 colors. The 8 bits are divided into 4 fields, as follows:

0	1	2		3	4		5	6		7
terrain				vehicles			effects			overlays

Bits 0, 1, and 2 are used to represent terrain colors, bits 3 and 4 are used to represent vehicles, bits 5 and 6 are used to represent effects, and bit 7 is used to represent overlays.

The code that sets up the color map uses these bit-fields to implement the following *masking rule*: Each bit-field represents, in effect, an image-plane. The planes are stacked on top of each other, with the overlay plane closest to the viewer. The bit values in each bit field specify the color that is present on that image-plane, at a particular pixel. Zero (all bits 0) represents a transparent "color". Thus the color the user actually sees at the pixel will be the color that is coded in the *closest non-zero* bit-field. Zero bit-fields in front of this one are transparent; bit-fields behind it are masked by its opaque color. If all the bit-fields are zero, then all four layers are transparent, and the user sees a fixed background color that effectively forms a final background image-plane behind the four original image-planes.

This masking effect is not provided by the Symbolics software, but is implemented by the SAF code, using the color map, an array of 256 colors. For each 8-bit pattern, a color-map entry with the corresponding integer index is created, using the masking rule to determine the color. This could be accomplished by scanning each bit-pattern to find the closest (highest numbered) nonzero bit-field, but instead, the colors for the layers are simply loaded into the color-map starting with the lowest field, and working toward the highest (closest) field, as follows.

First, the background color, which happens to be green, is loaded into the 0 entry in the color-map. Next, for each of the 7 nonzero combinations in the first bitfield (terrain), all color-map indices which match that combination in that field are assigned the corresponding terrain color. Then, for each of the 3 nonzero combinations in the second bitfield (vehicles), all color-map indices which match that combination in that field are assigned the corresponding vehicle color, reassigning the colors of some indices that had previously been given terrain colors. This process, which occurs in the function make-alu-and-set-colormap (in the CSU map>color-map.lisp) is continued for each bit-field. Because colors for higher-numbered fields (closer to the viewer) are loaded in *after* lower-numbered fields, the colormap obeys the masking rule. In fact, if a given nonzero 8-bit pattern has some number K of nonzero bit fields, its color will be set K times, once for each bit-field, and the final value will be the *last* one set, by the *closest* nonzero bit-field.

The code does this in the function setup-color-alus. Terrain colors have previously been loaded elsewhere, so the vehicles, effects, and overlay colors are loaded, in that order. Notice also that alus for the transparent color in each field are created, using the function make-an-alu; these are used to *erase* imagery from the corresponding image-plane. The masking rule insures that when the visible image plane is erased at a given pixel, the next nonzero image plane beneath it becomes visible, so features that were masked do not have to be redrawn.

The arguments to make-an-alu-and-set-colormap are (in order) the size of the bit-field, the starting position of the bit-field, the specific bit-pattern in that field, and the red, green and blue numbers (adding up to 1.0) for the color. The function make-an-alu is similar, but without the color numbers.

2.4.3.1.1 '(*ERASE-VEHICLES-ALU* *DEFENSE-ALU* *OFFENSE-ALU* *TRIM-ALU* *ERASE-EFFECTS-ALU*

Definition 1

WHITE-EFFECTS-ALU *YELLOW-EFFECTS-ALU* *BOMB-EFFECTS-ALU*
ERASE-OVERLAY-ALU
OVERLAY-ALU)
 >saf>color-window>color-alus.lisp

Type: EXPORT

Arguments: ()

Outputs:

Calls: None

Called by: None

Description: None

2.4.3.1.2 SETUP-COLOR-ALUS

Definition 2

>saf>color-window>color-alus.lisp
Type: Function
Arguments: ()
Outputs:

Calls: *OVERLAY-ALU*
>map>color-map.lisp
ERASE-OVERLAY-ALU
>map>color-map.lisp
MAKE-AN-ALU
>map>color-map.lisp
MAKE-ALU-AND-SET-COLOR-MAP
>map>color-map.lisp
OFFENSE-ALU
>saf>sys>vars.lisp
DEFENSE-ALU
>saf>sys>vars.lisp
ERASE-EFFECTS-ALU
>saf>sys>vars.lisp
ERASE-VEHICLES-ALU
>saf>sys>vars.lisp
BOMB-EFFECTS-ALU
>saf>sys>vars.lisp
TRIM-ALU
>saf>sys>vars.lisp
WHITE-EFFECTS-ALU
>saf>sys>vars.lisp
YELLOW-EFFECTS-ALU
>saf>sys>vars.lisp

Called by: (INITIALIZATION *TERRAIN-INITIALIZATION-LIST* Init Window)
No Source File Record
(METHOD TOP-LEVEL SAF)
>saf>ui>frame.lisp

Description: None

2.4.3.1.3 Init Window

Definition 3

>saf>color-window>color-alus.lisp
Type: ADD-INITIALIZATION
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.2 CSU fonts>bluefor-icons.bfd

Font containing US unit and vehicle symbols. These symbols, and those in fonts>opfor-icons.bfd and fonts>military-icons.bfd, are adapted from standard military symbols. Many of these are described in Chapter 2 of the Department of the Army Field Manual *Operational Terms and Symbols*, (Field Manual FM 101-5-1.)

To view a font on the Symbolics workstation, type

show font [font-name]

at the Lisp command line. For a list of available fonts, press the Help key after typing "show font".

2.4.3.3 CSU fonts>opfor-icons.bfd

Font containing Soviet unit and vehicle symbols.

2.4.3.4 CSU simnet-objects>draw-vehicles.lisp

This unit contains code for drawing vehicles on the PVD. It uses graphics primitives to create images for helicopters, fixed-wing aircraft, tank hulls and turrets, mechs (mechanized infantry vehicles), mortars and trucks. This code is used when the user selects "No" under the "Paint Vehicles as Military Icons" option on the Appearance submenu of the robo-cop-control menu. (See the discussion of robo-cop-control in CSU ui>parameter-menus.lisp, section 2.7.10) When the user selects "Yes", the default, vehicles are painted using the new vehicle drawing code in in simnet-objects>new-draw-vehicles.lisp.

The code in this unit draws with realistic position and orientation, unlike the coarser (but faster) font-based approach in new-draw-vehicles.lisp. The realism feature is useful for debugging code that controls vehicle motion, because it displays more precise position and turret rotation, making it easier to see how the vehicles are actually responding.

2.4.3.4.1 ERASE-VEHICLE-ALU

Definition 1

>saf>simnet-objects>draw-vehicles.lisp

Type: Subst

Arguments: ()

Outputs:

Calls: *ERASE-VEHICLES-ALU*

>saf>sys>vars.lisp

Called by: (METHOD DRAW-MISSILE-IMAGE MISSILE-IMAGE)

>saf>simnet-objects>draw-vehicles.lisp

(METHOD DRAW-TURRET-IMAGE RD-TURRET-IMAGE)

>saf>simnet-objects>draw-vehicles.lisp

(METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)

>saf>simnet-objects>draw-vehicles.lisp

(METHOD DRAW-IMAGE FIGHTER-IMAGE)

>saf>simnet-objects>draw-vehicles.lisp

(METHOD DRAW-IMAGE HELO-IMAGE)

>saf>simnet-objects>draw-vehicles.lisp

DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
WITH-CORRECT-MAP-Graphics
>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.2 WITH-CORRECT-MAP-Graphics

Definition 2

>saf>simnet-objects>draw-vehicles.lisp
Type: Macro
Arguments: ((STREAM ALU) &BODY BODY)
Outputs:
Calls: WITH-MAP-Graphics
 >map>utilities.lisp
 WITH-FAST-MAP-Graphics
 >map>utilities.lisp
 ERASE-VEHICLE-ALU
 >saf>simnet-objects>draw-vehicles.lisp
 WITH-CORRECT-MAP-Graphics
 >saf>simnet-objects>draw-vehicles.lisp
Called by: (METHOD DRAW-MISSILE-IMAGE MISSILE-IMAGE)
 >saf>simnet-objects>draw-vehicles.lisp
 (METHOD DRAW-TURRET-IMAGE RD-TURRET-IMAGE)
 >saf>simnet-objects>draw-vehicles.lisp
 (METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)
 >saf>simnet-objects>draw-vehicles.lisp
 (METHOD DRAW-IMAGE FIGHTER-IMAGE)
 >saf>simnet-objects>draw-vehicles.lisp
 (METHOD DRAW-IMAGE HELO-IMAGE)
 >saf>simnet-objects>draw-vehicles.lisp
 DRAW-FILLED-BOX
 >saf>simnet-objects>draw-vehicles.lisp
 DRAW-BOX
 >saf>simnet-objects>draw-vehicles.lisp
 WITH-CORRECT-MAP-Graphics
 >saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.3 *MIN-IMAGE-SCALE*

Definition 3

>saf>simnet-objects>draw-vehicles.lisp
Type: DEFINE-APPEARANCE-OPTION
Arguments: ()
Outputs:
Calls: None

Called by: DRAW-ARTY
>saf>simnet-objects>draw-effects.lisp
AMMO-TYPE-RADIUS
>saf>simnet-objects>draw-effects.lisp
(METHOD UPDATE-SCALE GROUND-VEHICLE-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD UPDATE-SCALE FIGHTER-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD UPDATE-SCALE HELO-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.4 DRAW-BOX

Definition 4

>saf>simnet-objects>draw-vehicles.lisp
Type: Function
Arguments: (RASTER ALU X Y FRONT BACK WIDTH WX/HY WY/HY)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
ERASE-VEHICLES-ALU
>saf>sys>vars.lisp
*!
>saf>sys>macros.lisp
ERASE-VEHICLE-ALU
>saf>simnet-objects>draw-vehicles.lisp
WITH-CORRECT-MAP-Graphics
>saf>simnet-objects>draw-vehicles.lisp

Called by: (METHOD DRAW-COMPARTMENT-IMAGE B-COMPARTMENT-IMAGE)

>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-COMPARTMENT-IMAGE A-COMPARTMENT-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-HULL-IMAGE HULL-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.5 DRAW-FILLED-BOX

Definition 5

>saf>simnet-objects>draw-vehicles.lisp
Type: Function
Arguments: (RASTER ALU X Y FRONT BACK WIDTH WX/HY WY/HY)
Outputs:

Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
ERASE-VEHICLES-ALU
>saf>sys>vars.lisp
*!
>saf>sys>macros.lisp
ERASE-VEHICLE-ALU
>saf>simnet-objects>draw-vehicles.lisp
WITH-CORRECT-MAP-Graphics
>saf>simnet-objects>draw-vehicles.lisp

Called by: (METHOD DRAW-COMPARTMENT-IMAGE B-COMPARTMENT-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-COMPARTMENT-IMAGE A-COMPARTMENT-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW-HULL-IMAGE HULL-IMAGE)
>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.6 '(DRAW-IMAGE ERASE-IMAGE)

Definition 6

>saf>simnet-objects>draw-vehicles.lisp

Type: EXPORT
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.7 DRAW-IMAGE

Definition 7

>saf>simnet-objects>draw-vehicles.lisp

Type: DEFGENERIC
Arguments: ()
Outputs:
Calls: None
Called by: DRAW-SANDBOX-OBJECT
>saf>sandbox>sandbox-object.lisp
(METHOD ERASE-IMAGE IMAGE)
>saf>simnet-objects>draw-vehicles.lisp
(METHOD DRAW VEHICLE)
>saf>objects>vehicle.lisp

Description: None

2.4.3.4.8 ERASE-IMAGE

Definition 8

>saf>simnet-objects>draw-vehicles.lisp
Type: DEFAUTOMETHOD
Arguments: ()
Outputs:
Calls: None
Called by: ERASE-SANDBOX-OBJECT
 >saf>sandbox>sandbox-object.lisp
 (METHOD ERASE VEHICLE)
 >saf>objects>vehicle.lisp
Description: None

2.4.3.4.9 UPDATE-SCALE

Definition 9

>saf>simnet-objects>draw-vehicles.lisp
Type: DEFGENERIC
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
 >saf>simnet-objects>draw-vehicles.lisp
 (METHOD DRAW-IMAGE IMAGE BEFORE)
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.10 IMAGE

Definition 10

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.11 (METHOD UPDATE-SCALE IMAGE)

Definition 11

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (NEW-M/PIXEL &KEY (FORCE NIL))
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.12 (METHOD ERASE-IMAGE IMAGE)

Definition 12

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y Z BEARING BEARING2 ALU)
Outputs:
Calls: DRAW-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.13 (METHOD DRAW-IMAGE IMAGE BEFORE)

Definition 13

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y Z BEARING BEARING2 ALU ALU2
&OPTIONAL (DRAWP T))
Outputs:
Calls: UPDATE-SCALE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.14 (METHOD DRAW-IMAGE IMAGE)

Definition 14

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y Z BEARING BEARING2 ALU ALU2
&OPTIONAL (DRAWP T))
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.15 IMAGE

Definition 15

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: SMOKE-CLOUD-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 MISSILE-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 FAADS-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp

B-COMPARTMENT-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HOWITZER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
MORTAR-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
FUEL-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
A-COMPARTMENT-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
COMMAND-POST-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
SUPPLY-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
AMMO-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
RD-TURRET-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
MECH-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
SQ-TURRET-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
TANK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HULL-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
UNKNOWN-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
GROUND-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
FIGHTER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
REMOTE-FIGHTER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
LOCAL-FIGHTER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HELO-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
REMOTE-HELO-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
LOCAL-HELO-IMAGE
>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.16 HELO-IMAGE

Definition 16

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:

Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.17 (METHOD UPDATE-SCALE HELO-IMAGE)

Definition 17

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (NEW-M/PIXEL &KEY (FORCE NIL))
Outputs:
Calls: *MIN-IMAGE-SCALE*
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.18 (METHOD DRAW-IMAGE HELO-IMAGE)

Definition 18

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y Z BEARING BEARING2 ALU ALU2
&OPTIONAL (DRAWP T))
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-Graphics
 >map>utilities.lisp
 WITH-FAST-MAP-Graphics
 >map>utilities.lisp
 VEH-IMMOBILE
 >saf>sys>constants.lisp
 VEH-DESTROYED
 >saf>sys>constants.lisp
 VEH-OUT-OF-GAS
 >saf>sys>constants.lisp
 VEH-OUT-OF-AMMO
 >saf>sys>constants.lisp
 ERASE-VEHICLES-ALU
 >saf>sys>vars.lisp
 *!
 >saf>sys>macros.lisp
 IS-STATUS
 >saf>simnet-objects>macros.lisp
 ERASE-VEHICLE-ALU
 >saf>simnet-objects>draw-vehicles.lisp
 WITH-CORRECT-MAP-Graphics
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.19 LOCAL-HELO-IMAGE

Definition 19

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 HELO-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.20 REMOTE-HELO-IMAGE

Definition 20

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 HELO-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.21 HELO-IMAGE

Definition 21

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: REMOTE-HELO-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 LOCAL-HELO-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.22 FIGHTER-IMAGE

Definition 22

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:

Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.23 (METHOD UPDATE-SCALE FIGHTER-IMAGE)

Definition 23

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (NEW-M/PIXEL &KEY (FORCE NIL))
Outputs:
Calls: *MIN-IMAGE-SCALE*
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.24 (METHOD DRAW-IMAGE FIGHTER-IMAGE)

Definition 24

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y Z BEARING BEARING2 ALU ALU2
&OPTIONAL (DRAWP T))
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-Graphics
 >map>utilities.lisp
 WITH-FAST-MAP-Graphics
 >map>utilities.lisp
 VEH-DESTROYED
 >saf>sys>constants.lisp
 VEH-OUT-OF-GAS
 >saf>sys>constants.lisp
 VEH-OUT-OF-AMMO
 >saf>sys>constants.lisp
 ERASE-VEHICLES-ALU
 >saf>sys>vars.lisp
 *!
 >saf>sys>macros.lisp
 IS-STATUS
 >saf>simnet-objects>macros.lisp
 ERASE-VEHICLE-ALU
 >saf>simnet-objects>draw-vehicles.lisp
 WITH-CORRECT-MAP-Graphics
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.25 LOCAL-FIGHTER-IMAGE

Definition 25

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 FIGHTER-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.26 REMOTE-FIGHTER-IMAGE

Definition 26

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 FIGHTER-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.27 FIGHTER-IMAGE

Definition 27

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: REMOTE-FIGHTER-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 LOCAL-FIGHTER-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.28 GROUND-VEHICLE-IMAGE

Definition 28

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp

Called by: None
Description: None

2.4.3.4.29 (METHOD UPDATE-HULL-SCALE GROUND-VEHICLE-IMAGE)

Definition 29

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.30 (METHOD UPDATE-TURRET-SCALE GROUND-VEHICLE-IMAGE)

Definition 30

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.31 (METHOD UPDATE-COMPARTMENT-SCALE GROUND-VEHICLE-IMAGE)

Definition 31

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.32 (METHOD UPDATE-MISSILE-SCALE GROUND-VEHICLE-IMAGE)

Definition 32

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.33 (METHOD UPDATE-SCALE GROUND-VEHICLE-IMAGE)
Definition 33

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (NEW-M/PIXEL &KEY (FORCE NIL))
Outputs:
Calls: *MIN-IMAGE-SCALE*
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.34 (METHOD DRAW-HULL-IMAGE GROUND-VEHICLE-IMAGE)

Definition 34

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY ALU)
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.35 (METHOD DRAW-TURRET-IMAGE GROUND-VEHICLE-IMAGE)

Definition 35

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY WX/TY WY/TY ALU)
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.36 (METHOD DRAW-COMPARTMENT-IMAGE GROUND-VEHICLE-IMAGE)

Definition 36

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY ALU)
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.37 (METHOD DRAW-MISSILE-IMAGE GROUND-VEHICLE-IMAGE)

Definition 37

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER X Y WX/HY WY/HY WX/TY WY/TY ALU)
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.38 (METHOD DRAW-IMAGE GROUND-VEHICLE-IMAGE)

Definition 38

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y Z BEARING BEARING2 ALU ALU2
&OPTIONAL (DRAWP T))
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.39 GROUND-VEHICLE-IMAGE

Definition 39

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: FAADS-IMAGE
>saf>simnet-objects>draw-vehicles.lisp UNKNOWN-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp COMMAND-POST-IMAGE
>saf>simnet-objects>draw-vehicles.lisp HOWITZER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp MORTAR-IMAGE
>saf>simnet-objects>draw-vehicles.lisp SUPPLY-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp FUEL-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp

AMMO-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
MECH-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
TANK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.40 HULL-IMAGE

Definition 40

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.41 (METHOD UPDATE-HULL-SCALE HULL-IMAGE)

Definition 41

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.42 (METHOD DRAW-HULL-IMAGE HULL-IMAGE)

Definition 42

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY ALU)
Outputs:
Calls: VEH-IMMOBILE
>saf>sys>constants.lisp
VEH-DESTROYED
>saf>sys>constants.lisp
IS-STATUS
>saf>simnet-objects>macros.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.43 HULL-IMAGE

Definition 43

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: FAADS-IMAGE
>saf>simnet-objects>draw-vehicles.lisp UNKNOWN-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp COMMAND-POST-IMAGE
>saf>simnet-objects>draw-vehicles.lisp HOWITZER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp MORTAR-IMAGE
>saf>simnet-objects>draw-vehicles.lisp SUPPLY-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp FUEL-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp AMMO-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp MECH-IMAGE
>saf>simnet-objects>draw-vehicles.lisp TANK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.44 SQ-TURRET-IMAGE

Definition 44

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.45 (METHOD UPDATE-TURRET-SCALE SQ-TURRET-IMAGE)

Definition 45

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.46 (METHOD DRAW-TURRET-IMAGE SQ-TURRET-IMAGE)
Definition 46

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY WX/TY WY/TY ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
VEH-CANTFIRE
>saf>sys>constants.lisp
VEH-DESTROYED
>saf>sys>constants.lisp
ERASE-VEHICLES-ALU
>saf>sys>vars.lisp
*!
>saf>sys>macros.lisp
IS-STATUS
>saf>simnet-objects>macros.lisp
ERASE-VEHICLE-ALU
>saf>simnet-objects>draw-vehicles.lisp
WITH-CORRECT-MAP-Graphics
>saf>simnet-objects>draw-vehicles.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp

Called by: None
Description: None

2.4.3.4.47 SQ-TURRET-IMAGE
Definition 47

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: TANK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.48 RD-TURRET-IMAGE
Definition 48

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()

Outputs:

Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp

Called by: None
Description: None

2.4.3.4.49 (METHOD UPDATE-TURRET-SCALE RD-TURRET-IMAGE)

Definition 49

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.50 (METHOD DRAW-TURRET-IMAGE RD-TURRET-IMAGE)

Definition 50

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY WX/TY WY/TY ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
 >map>utilities.lisp
 WITH-MAP-Graphics
 >map>utilities.lisp
 WITH-FAST-MAP-Graphics
 >map>utilities.lisp
 VEH-CANTFIRE
 >saf>sys>constants.lisp
 VEH-DESTROYED
 >saf>sys>constants.lisp
 ERASE-VEHICLES-ALU
 >saf>sys>vars.lisp
 *!
 >saf>sys>macros.lisp
 IS-STATUS
 >saf>simnet-objects>macros.lisp
 ERASE-VEHICLE-ALU
 >saf>simnet-objects>draw-vehicles.lisp
 WITH-CORRECT-MAP-Graphics
 >saf>simnet-objects>draw-vehicles.lisp

Called by: None
Description: None

2.4.3.4.51 RD-TURRET-IMAGE

Definition 51

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: FAADS-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 MECH-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.52 A-COMPARTMENT-IMAGE

Definition 52

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.53 (METHOD UPDATE-COMPARTMENT-SCALE A-COMPARTMENT-IMAGE)

Definition 53

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.54 (METHOD DRAW-COMPARTMENT-IMAGE A-COMPARTMENT-IMAGE)

Definition 54

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY ALU)
Outputs:

Calls: VEH-DESTROYED
>saf>sys>constants.lisp
IS-STATUS
>saf>simnet-objects>macros.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.55 A-COMPARTMENT-IMAGE

Definition 55

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: COMMAND-POST-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HOWITZER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
MORTAR-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
SUPPLY-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
FUEL-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
AMMO-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.56 B-COMPARTMENT-IMAGE

Definition 56

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.57 (METHOD UPDATE-COMPARTMENT-SCALE B-COMPARTMENT-IMAGE)

Definition 57

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.58 (METHOD DRAW-COMPARTMENT-IMAGE B-COMPARTMENT-IMAGE)

Definition 58

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER STATUS X Y WX/HY WY/HY ALU)
Outputs:
Calls: VEH-DESTROYED
>saf>sys>constants.lisp
IS-STATUS
>saf>simnet-objects>macros.lisp
DRAW-BOX
>saf>simnet-objects>draw-vehicles.lisp
DRAW-FILLED-BOX
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.59 B-COMPARTMENT-IMAGE

Definition 59

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: HOWITZER-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
MORTAR-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
FUEL-TRUCK-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.60 MISSILE-IMAGE

Definition 60

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.61 (METHOD UPDATE-MISSILE-SCALE MISSILE-IMAGE)

Definition 61

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: ()
Outputs:
Calls: None
Called by: None
Description: None

2.4.3.4.62 (METHOD DRAW-MISSILE-IMAGE MISSILE-IMAGE)

Definition 62

>saf>simnet-objects>draw-vehicles.lisp
Type: Method
Arguments: (RASTER HX HY WX/HY WY/HY WX/TY WY/TY ALU)
Outputs:
Calls: WITH-INTEGER-CONVERSION-MODE
>map>utilities.lisp
WITH-MAP-Graphics
>map>utilities.lisp
WITH-FAST-MAP-Graphics
>map>utilities.lisp
ERASE-VEHICLES-ALU
>saf>sys>vars.lisp
*!
>saf>sys>macros.lisp
ERASE-VEHICLE-ALU
>saf>simnet-objects>draw-vehicles.lisp
WITH-CORRECT-MAP-Graphics
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.63 MISSILE-IMAGE

Definition 63

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: FAADS-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.64 TANK-IMAGE

Definition 64

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 GROUND-VEHICLE-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 HULL-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 SQ-TURRET-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.65 TANK-IMAGE

Definition 65

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.66 MECH-IMAGE

Definition 66

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:

Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
GROUND-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HULL-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
RD-TURRET-IMAGE
>saf>simnet-objects>draw-vehicles.lisp

Called by: None
Description: None

2.4.3.4.67 MECH-IMAGE

Definition 67

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.68 AMMO-TRUCK-IMAGE

Definition 68

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
GROUND-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HULL-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
A-COMPARTMENT-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.69 AMMO-TRUCK-IMAGE

Definition 69

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.70 FUEL-TRUCK-IMAGE

Definition 70

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 GROUND-VEHICLE-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 HULL-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 A-COMPARTMENT-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 B-COMPARTMENT-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp

Called by: None

Description: None

2.4.3.4.71 FUEL-TRUCK-IMAGE

Definition 71

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.72 SUPPLY-TRUCK-IMAGE

Definition 72

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 GROUND-VEHICLE-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 HULL-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 A-COMPARTMENT-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp

Called by: None

Description: None

2.4.3.4.73 SUPPLY-TRUCK-IMAGE

Definition 73

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.74 MORTAR-IMAGE

Definition 74

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 GROUND-VEHICLE-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 HULL-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 A-COMPARTMENT-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 B-COMPARTMENT-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.75 MORTAR-IMAGE

Definition 75

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.76 HOWITZER-IMAGE

Definition 76

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:

Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
GROUND-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HULL-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
A-COMPARTMENT-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
B-COMPARTMENT-IMAGE
>saf>simnet-objects>draw-vehicles.lisp

Called by: None

Description: None

2.4.3.4.77 HOWITZER-IMAGE

Definition 77

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.78 COMMAND-POST-IMAGE

Definition 78

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
>saf>simnet-objects>draw-vehicles.lisp
GROUND-VEHICLE-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
HULL-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
A-COMPARTMENT-IMAGE
>saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.79 COMMAND-POST-IMAGE

Definition 79

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None

Called by: INIT-IMAGES
>saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.80 UNKNOWN-VEHICLE-IMAGE

Definition 80

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 GROUND-VEHICLE-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
 HULL-IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.81 UNKNOWN-VEHICLE-IMAGE

Definition 81

>saf>simnet-objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()
Outputs:
Calls: None
Called by: INIT-IMAGES
 >saf>simnet-objects>draw-vehicles.lisp
Description: None

2.4.3.4.82 SMOKE-CLOUD-IMAGE

Definition 82

>saf>simnet-objects>draw-vehicles.lisp
Type: Flavor
Arguments: ()
Outputs:
Calls: IMAGE
 >saf>simnet-objects>draw-vehicles.lisp
Called by: None
Description: None

2.4.3.4.83 SMOKE-CLOUD-IMAGE

Definition 83

>saf>simnet objects>draw-vehicles.lisp
Type: COMPILE-FLAVOR-METHODS
Arguments: ()

Outputs:

Calls: None

Called by: INIT-IMAGES

>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.84 FAADS-IMAGE

Definition 84

>saf>simnet-objects>draw-vehicles.lisp

Type: Flavor

Arguments: ()

Outputs:

Calls: IMAGE

>saf>simnet-objects>draw-vehicles.lisp

GROUND-VEHICLE-IMAGE

>saf>simnet-objects>draw-vehicles.lisp

HULL-IMAGE

>saf>simnet-objects>draw-vehicles.lisp

RD-TURRET-IMAGE

>saf>simnet-objects>draw-vehicles.lisp

MISSILE-IMAGE

>saf>simnet-objects>draw-vehicles.lisp

Called by: None

Description: None

2.4.3.4.85 FAADS-IMAGE

Definition 85

>saf>simnet-objects>draw-vehicles.lisp

Type: COMPILE-FLAVOR-METHODS

Arguments: ()

Outputs:

Calls: None

Called by: INIT-IMAGES

>saf>simnet-objects>draw-vehicles.lisp

Description: None

2.4.3.4.86 *IMAGE-ARRAY*

Definition 86

>saf>simnet-objects>draw-vehicles.lisp

Type: Variable

Arguments: ()

Outputs:

Calls: None

Called by: IMAGE-FOR-VEHICLE

>saf>simnet-objects>draw-vehicles.lisp

Description: None